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ABSTRACT

The EUROTECNET program has been refocused to concentrate more on continuing vocational education as the area of greatest need across the European Community. Four priority fields or domains of innovative activity have been defined for the final 2 years of EUROTECNET. Priority domain 1 is innovative training needs analysis with a special focus on core competencies. A Europe-wide proposed classification categorizes technical, methodological, social, and behavioristic core competencies. Priority domain 2 is transfer of innovative methodologies for the planning and management of training in the framework of human resources development. The company as a learning organization is proposed, with changing roles of managers and workers and an increased role of the social partners in supporting the learning organization. Priority domain 3 is training providers as innovative service centers for enterprises. Requirements are systematic continuing training of employees in small and medium-sized enterprises (SMEs) and a new "training consultancy" approach between training institutions and SMEs. Priority domain 4 is innovative pedagogical methodologies and approaches. Trends in this area are as follows: learning situations closely related to work situations; independence and responsibility of individuals; involvement of all actors in training; and a continuous learning process. Training systems must include partnerships with industry, paradigmatic changes, and a lifelong learning continuum. (Appendices list EUROTECNET national strategic conferences and 49 publications.) (YLB)

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EDUCATION
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Human resource development and training strategies: the experience and results of the Eurotecnet programme

Four priority fields of focus

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HUMAN RESOURCE DEVELOPMENT AND TRAINING STRATEGIES: THE EXPERIENCE AND RESULTS OF THE EUROTECNET PROGRAMME

FOUR PRIORITY FIELDS OF FOCUS

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PREFACE

The EUROTECNET Programme originated in a Council Resolution of 1983 dealing with *"Vocational Training measures in the field of new Information Technologies"*. This gave rise to a four year pilot Programme (1985-1989).
By the end of the 1980's the industrial and commercial world had changed again and the problem then was that companies were having difficulties in exploiting the benefits of new technology. This was because traditional organisational and management systems together with Tayloristic thinking about how workers should do their jobs were not appropriate for optimal benefits.

The objective of the EUROTECNET programme as laid down in the Council Decision (1990-1994) was "*to promote innovation in the fields of basic and also of continuing vocational training with a view to taking account of current and future technological changes* and their impact on employment, work and necessary qualifications and skills." Therefore it was not so much a question of focusing on training for and by New Technologies but rather on the integrated development of human resources in order that effective work organisation and competencies could be established. The main focus of the EUROTECNET programme accordingly was on providing the European workforce with competencies so that the benefits of new technology could be fully exploited. This is not just a question of technological skills; for technology to be effectively implemented in a company, all members of the workforce require a high degree of social, organisational and business competencies as well as technological skills. Changing the work organisation becomes essential because the work place is where professional skills are acquired on a permanent basis and where these skills can benefit the enterprise.

The EUROTECNET Programme attempted to address several questions:

- What kind of skilled workers are required in a modern enterprise integrating the information technologies ?
- How can workers become life-long learners ?
- What are the new skills required by workers today ?
- How will the Enterprise of the Future Learn ?
- What is the New Role of the Trainer to day ?

It was in this general context that the EUROTECNET programme took place. When the areas most in need of innovation began to be addressed, it became clear that virtually all components of the training system required attention. For this reason, the idea was launched in 1992 whereby each Member State would identify and agree (in consultation with the Social Partners) one single issue of strategic and critical importance. These critical issues became the central theme for a major study and transnational debate which in turn gave rise to a series of strategic conferences which took place in all 12 Member States during 1992 and 1993. The results of this work are synthesised here.

During this period of 1992/93 it also became clear that the Programme should concentrate more on continuing vocational training as this was the area of greatest need across the European Union. The Programme was re-focused to this end and four priority fields or domains of innovative activity were defined for the final two years of EUROTECNET.

- Priority domain 1: *Innovative Training Needs Analysis with a special Focus on Core/Key Qualifications*, for example innovative methods for analysing the needs of enterprises, tools to detect new types of professions or new qualifications.

- Priority domain 2: *Transfer of Innovative Methodologies for the Planning and Management of Training in the Framework of Human Resource Development*, for example special methodologies of training at the work place.

- Priority domain 3: *Training Providers as Innovative Service Centres for Enterprises*, for example strategies of marketing training towards SMEs with a view to fostering their investment in training, and the restructuring of training centres in order to meet the needs of enterprises in a more appropriate way.

- Priority domain 4: *Innovative Pedagogical Approaches/Methodologies*, for example strategies of formal self-learning, training sessions at the work place, innovative and flexible training tools such as multimedia, etc.

The results of the work by the projects in each domain was brought together in four individual reports which are presented in synthesised form in this publication.

These reports were produced by the Technical Assistance Office in collaboration with the National Animation and Dissemination Unit of the Member States.

The Commission takes this opportunity to acknowledge the work of these four working groups.

I. Innovative training needs analysis with a special focus on core competencies

Kaj Olesen	Danish Teknologisk Institute - Taastrup (DK)
Martin Jacobs	CIBB - 's Hertogenbosch (NL)
Maria Luz Cacheiro	Fondo Promocion de Empleo - Madrid (E)

II. Transfer of innovative methodologies for the planning and management of training in the framework of human resource development

Bent Paulsen	Bundesinstitut für Berufsbildung - Berlin (D)
Margaret Barry	FAS Employment and Training Authority - Dublin (IRL)
Jose Luis De Almeida Silva	CENCAL - Caldas da Rainha (P)

III. Training providers as innovative service centres for enterprises

Roger Langdon	Employment Department - Sheffield (GB)
Mika Ioannidou	National Labour Institute - Athens (GR)
Gerd Goetschalckx	VDAB - Brussels (Bnl)

IV. Innovative methodological and pedagogical approaches

Alain Dupeyron	Racine - Paris (F)
Massimo Tomassini	ISFOL - Rome (I)
Benoît Leonard	Ministère de l'Education et de la Formation - Brussels (Bfr)

The work of the Technical Assistance Office which was managed by the E.C.W.S. Brussels (European Centre for Work and Society) is also greatly appreciated.

DG XXII - Education, Training and Youth September 1995

INTRODUCTION

Involvement in European programmes, whether on a participatory, an organisational, or an advisory basis, has reinforced a trend towards internationalisation which already existed in some higher education institutions but not in vocational educational and training systems and has enlarged, both in scope and scale, the opportunities for accentuating this trend as between the Member States of the Community. Perhaps the most important result of the Community programmes is that they have been instrumental in getting the vocational education and training institutions to view their functions in a European as well as in a national and regional context.

The growth of this European context in education and training is assuming a strategic importance to the European Union in the light of the single market, the movements towards political union and the global challenges which must be met by the European economy. These developments depend, on the one hand, on the skills and knowledge which underpin economic competence and, on the other, on the understanding and commitment which support significant political transformations. They are expected to enhance the mobility of citizens, increasing the interaction between them and bringing about a cohesiveness which will in due course affect the lives of all Community citizens. The European Union and its Member States will have to respond to the challenges of science and technology and of global competition and do this increasingly within Community structures.

Education and training are certainly crucial factors in the effort to improve competitiveness and reduce unemployment and in the transition to revolutionised production and management systems. However, quality basic education and vocational training alone will not be able to safeguard or contribute substantially to the competitiveness of Europe's manufacturing industries. Without taking an integrated approach to enhancing competitiveness, encompassing technological, organisational and personnel development, and without generating the motivation within the workforce to achieve a virtual cultural revolution and accept a change in mentality concerning work, technological progress, innovation and industrial relations, Europe will not make significant gains in productivity, competitiveness and employment generation.

To achieve these changes, both government and industry will have to play their part in creating a desire to learn among the workforce. The recent loss of European competitiveness is not destiny due to geography. The key to the success of European companies lies within ourselves. Europe has an opportunity to regain the initiative by reviving its characteristic strengths, in particular a generally high level of education and specialisation and a capacity for individual creativity. In the spirit of change and innovation, Europe must also be able to let go of traditional approaches and systems which result in rigidity, particularly in the area of labour relations.

The one area where all of Europe retains a significant traditional advantage is in access to knowledge and learning. The extent of our future success will be measured by the degree to which we are able to tap the resources of a knowledge-based society. In this respect, a very clear message is emerging from employers concerning the needs of the

future workforce. Industry, both manufacturing and services, is demanding people with a new 'intellectual profile'.

The contribution of the EUROTECNET programme to this challenge relates to four areas of investigation:

- *Innovative Training Needs Analysis with a special Focus on Core/Key Qualifications*
- *Transfer of Innovative Methodologies for the Planning and Management of Training in the Framework of Human Resource Development*
- *Training Providers as Innovative Service Centres for Enterprises*
- *Innovative Pedagogical Approaches/Methodologies.*

They have been developed through the network of projects and through a series of conferences, launched in late 1992 and carried out through 1993, on themes chosen by the individual Member States resulting from a national reflection of issues of critical importance.

The "fil rouge", the thread which binds all the concepts together and asked for synergetic, cooperative work from all the EUROTECNET actors, was the idea of **designing a flexible training model aimed at a new integration of work and learning.** This was built on the concept of the "learning organisation", a model for the modern, effective enterprise, where learning constitutes an integral part of work, and training an integral part of managing.
A new model which involves radical changes in both enterprises and training institutions in relation to management, structures, work organisation, learning methods and the role of the training personnel.

Peter Senge[1] in his book "The Fifth Discipline" writes:

> *"Engineers say that a new idea has been "invented" when it is proven to work in the laboratory. The idea becomes an "innovation" only when it can be replicated reliably on a meaningful scale at practical costs. If the idea is sufficiently important, such as the telephone, the digital computer, or commercial aircraft, it is called a "basic innovation" and it creates a new industry or transforms an existing industry. In these terms, learning organisations have been invented but they have not yet been innovated.*
> *In engineering, when, an idea moves from an invention to an innovation, diverse "component technologies" come together. Emerging from isolated developments in separate field of research these components gradually form an "ensemble of technologies that are critical to each others' success". Until this ensemble forms, the idea, though possible in the laboratory, does not achieve its potential in practice.*
> *... Today, I believe, five new component technologies[2] are gradually converging to innovate learning organisations. Though developed*

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1 P. Senge, The fifth discipline. The art and the practice of the learning organisation", Doubleday, New York, 1990

separately, each will, I believe, prove critical to the others' success, just as occurs with any ensemble. Each provides a vital dimension in building organisations that can truly learn".

It will be difficult to contradict Senge: the learning organisation still needs to be *innovated* and that *innovation* will be brought about by the patient and continuous work of those who believe in it. In this spirit the results of the EUROTECNET programme, which emerge from "isolated developments in separate fields" (the experience of the individual projects or the outcomes of a single conference), can be looked at as the basic elements to be put together to form the *ensemble of component technologies* which will render the "idea" achievable in practice.

This document, produced to illustrate the acquis (accumulated experience and expertise), should be seen as an attempt to create a consistent ensemble based on *isolated* pieces of work.

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2 The author refers here to systems thinking; personal mastery; mental models; building shared vision; team learning. The five disciplines that he identifies to be the integrated tools to build up a learning organisation.

1. INNOVATIVE TRAINING NEEDS ANALYSIS WITH A SPECIAL FOCUS ON CORE COMPETENCIES

1.1. Obsolescence of qualifications and professions

In the late 80's. the development of high level technological skills was identified as the key to economic progress. This is still valid in the 90's as has been shown in the IRDAC report on skills shortages in Europe. However, what is equally evident is that technological innovation on its own will not equip Europe to reach its socio-economic goals. Questions continue to be asked concerning Europe's competitive and therefore productivity performance in the global market and the necessary development of human resources at a European level which needs to take place.

In order to respond to this problem, it is necessary to establish the link between economic growth and competence development in a global context. Today's economy is one whose main features are shorter life cycles of products and services, and much more "knowledge intensive" transactions. This creates a potential both in economic and employment (maybe more in terms of "employability") terms. This potential had often not been reached in the past because of under-investment in education and training, not so much in terms of money and efforts spent but in terms of choosing, when necessary, new and constantly adapting approaches and methodologies. This means that there was a continuing competence gap which has been growing between the competencies the economy was demanding, and what was supplied and delivered by the training systems. In other terms: there was still too often a lack of equivalence between the certified qualification delivered by the Educational system or Training Institute and the competencies required in real work situations within enterprises.

The main changes nowadays in business are: first, high quality in products and services is becoming imperative, there is no future for mass production of low quality products; second, the increasing pressure created by the shorter life cycles of products and services demands greater flexibility on production processes, thereby changing work organisation further away from the traditional tayloristic model. Today's economy is witnessing a strong movement away from mass production in the direction of mass customisation.

1.2. Obsolescence of traditional skills

New technology, along with the globalisation of markets has made an enormous impact on the qualification requirements of the labour force. The decline of the "Rust-belt" industries has wrecked economic and social havoc in many parts of Europe. In fact, those areas which were in the forefront of the Industrial Revolution in the last century, such as the Midlands in the United Kingdom and the Ruhr Valley in Germany have suffered more than other less industrially developed regions.

The "qualification culture" in those old industries locked them into a world of fixed narrow specific skills, which were to be passed on from generation to generation. This created a climate which resisted change and as a consequence slowed the introduction of new methods of production and new technologies.

With the introduction of new technologies, skills vanish, change and/or develop. The use of CIM and CAD/CAM systems in industry for example, means that the demand for software for these machines will increase as will the demand for programmers. Knowledge of informatics is thus a new qualification requirement. Skills are also upgraded and the types of qualification required are changing.

1.3. Changes in job profiles

Job profiles change rather quickly under the current job environments: the modes in which work is organised, the characteristics of the enterprise, the methods of production and the working conditions must all be considered. This led to the formulation of the objective of the EUROTECNET Programme: "to take account of the current and future technological changes and their impact on employment, work and necessary qualifications and skills".

The factors influencing jobs and job profiles are numerous. These may be directly linked to the world of employment and production or relate more generally to social and cultural developments, but also to changes in legislation and culture.
These factors may be identified for instance by changes in the technological field (the appearance of new materials, new tools and machinery, changes in production and working methods, new assembly procedures, new methods of maintenance and repair) or in the socio-economic field (changes in consumer behaviour, changes in legislation, changes in the environment, developments in the markets and prices, organisational changes).

For example, in the plumbing and heating industry, companies produce prefabricated parts, as a result of which the plumber on site only needs to carry out assembly work.

1.4. The new competencies requirements

1.4.1. The need for "core competencies"

Traditional and narrow skills tend to disappear in a "knowledge intensive" economy. New skills such as multiskilling, customer oriented skills, initiative, creativity, responsibility, team work capacities are demanded.

In analysing changes in the nature of competencies, it is evident that the "qualification" is not a uni-dimensional variable. Functions or jobs are distinguishable from one another by the type of competencies required. However within this multitude of competencies, common dimensions can be ascertained: responsibility, expertise, interdependence and training.

In addition to the technical competencies, the following main competencies required for workers in new technologies are as follows:

- visualisation, i.e. the capacity to mentally manipulate models;
- understanding of a process: how machines function and their interaction between machines and the product;
- statistical deduction;
- verbal, oral and visual communication;
- individual responsibility for the product and the process;
- make once off judgement;
- capacity to combine business and technological considerations.

To this list can be added worker flexibility and adaptability, ability and willingness to continuously improve competencies.
The scheme presented below shows the nature of shifts in competencies resulting from new technologies or new ways of organising work:

Factors of competencies	Old content of competencies	New content of competencies
responsibility	based on behaviour (effort, discipline)	based on taking initiatives
expertise	related to experience	cognitive (identify and solve problems)
interdependence	sequential	systematic (group working)
training	acquired once and for all	continuous
learning	passive learning (being trained)	self-learning competency (responsible for own learning)

In a EUROTECNET publication of 1990 entitled "The need for Innovative Training in the Financial Services Sector", the following comparison was quoted:

Old competencies	New competencies
ability to operate in a well defined and stable environment	ability to operate in an ill defined and ever changing environment
capacity to deal with repetitive, straightforward and concrete work process	capacity to deal with non-routine and abstract work process
ability to operate in a supervised work environment	ability to handle decisions and responsibilities
isolated work	group work, interactive work
ability to operate within narrow geographical and time horizons	system-wide understanding, ability to operate within expanding geographical and time horizons

It is important to remark that there is a need to recognise the achievement of "old" competencies acquired through extensive work experience in resolving different real problems. It is only if this background is taken into account that new competencies can be consolidated or created. It must be underlined that these new competencies do not necessarily exclude or replace the old ones, but that both types of competencies can co-exist in many enterprises. The new ones would have made no sense under tayloristic work principles, they come into play within the modern systems where good technical skills are no longer sufficient for workers in new technologies. Analytical skills such as problem solving, interpretation of data, etc. are gaining importance. 'Cultural training', which aims to strengthen the communality of interest between workers and management and to increase the flexibility and adaptability of the workforce, is also an important element in current organisation and management approaches.

Competence and commitment seem to be interdependent and mutually reinforce characteristics of people. They make the new technology work, but at the same time they are highly dependent on the nature of the job and the quality of the work environment. Social and psychological needs pertaining to work are now recognised as key principles of job design.

It is important that people are trained not only for new technical requirements, but also for the changed or new requirements: social, entrepreneurial, cognitive.

To respond to this new scenario therefore, training bodies right across Europe are stressing the need for new broad based competencies. These are sometimes referred to as "core competencies" because they form a central or kernel dimension of different occupations.

These core competencies are seen to be essential to respond to to-days knowledge based technological industrial revolution. They are process competencies which transfer across different occupations as distinct from what can be termed product skills which are linked to specific occupations/professions.

1.4.2. The need for broader skills

The worker today has also to be able to operate in the world of enlarged occupations which the modern production processes are bringing into being.

The reason for it is that the shift from mass production to quality production and in smaller quantities is calling for a new organisation of work. In a modern enterprise, for instance within a Learning Organisation, work is performed within more or less ***autonomous work groups***. Within such groups, workers must be able, e.g.:

- to communicate;
- to solve technical and organisational problems;
- to cooperate, to plan, to decide and control together;

It is precisely that group, or team, which is now responsible for the product from the stage zero till the final product.

And this is what is totally new, namely the fundamental shift from a tayloristic work organisation (characterised by strong hierarchical systems and division of work) to a new kind of organisation. And working in such a new organisation requires not only core competencies from all workers and employees, but also broader skills as today's work sphere has been considerably enriched and enlarged. Being part of a team which is responsible for its product, the workers/employees must demonstrate their interest for the whole and total production process. They must even acquire technical skills which at the start were not part of his or their qualifications. This does not mean that workers must become expert in everything. But they must know all basic and useful principles which are needed to understand the totality of the production process. And, when problems arise, they must be able to find and to situate what goes wrong.

1.5. Core/key competencies: concept definitions

The human resources and their working potential have become the decisive factor in competition and for the success of the enterprise, being the source of creativity and innovation. This means that it is no longer the sole investment in new technologies, but rather the intelligent application of technologies as well as new ideas for products, services and efficient work processes which constitute the decisive advantages in competition and success.

On the level of workers/employees, all of these shifts and changes (organisational developments in the field of enterprise structures and work organisation) result in a combination (through computer application, horizontal networking, etc.) of previously divided or separated individual stages of production and processes. More and more tasks are being combined and turned into more comprehensive occupational profiles which raises the occupational requirements. This does not mean however that diverging, differently tailored or defined profiles will not continue to exist within the different Member States. Entry requirements tend to become increasingly similar although certain specialised and occupational specific characteristics are likely to remain.

As a result of these changes and chosen approaches, there is the clear need for a new way of looking at competencies. What is now required are workers/employees who have core competencies. The present tendency is towards giving all employees responsibility for management and quality, incorporating into the production process operations traditionally regarded as functionally separate, and making organisations more commercially dynamic.

It is in this general climate that employers are concerned less with specific training for a given job than with the development of more general, transferable skills, combining knowledge and expertise with behaviour, and therefore more with core competencies. It is generally accepted across Europe that these competencies are essential to respond to today's knowledge based technological-industrial revolution. In an EUROTECNET enquiry conducted in 1991 among several Member States, even though the core competencies were referred to by different names, there was a general consensus about the essential nature of these competencies. The following list shows the different designations across Member States:

- France *Compétences Transversales* (Crossing or Transferable competencies)
- UK *Core/Common Skills*
- Italy *Sapere Essere* (Knowing how to be)
- Germany *Schlüsselqualifikationen* (Key Qualifications)
- Ireland *Personal Effectiveness* (Self-Organising Attitude)
- Denmark *Procesuafhængige Kvalifikationer* (Process-Independent Qualifications)

Although the concept is widely accepted and is at the base of any new research in new qualifications, there is no one universally accepted definition of core competencies to provide a sufficient level of transparency in their evaluation and transferability.

1.6. Core/key competencies: A European-wide proposed classification/ categorisation

As already mentioned and as can be seen, it is rather difficult to try to give a European-wide definition (including classification and categorisation) of this concept because one has to respect the different terms used in the Member States and their different approaches towards these competencies. Nevertheless the EUROTECNET Technical Assistance Office tried in 1994 to summarise the main elements which constitute core competencies[3]. It retained the technical competencies in this context as their application has changed in the new context and work environment.

As such, it proposed a distinction between technical, methodological, social and behaviouristic competencies, although they have to be combined in a holistic way and not separately as they are interconnected. This also determines the methodology used to acquire and develop them.

1. Technical competencies
   Technological and organisational change and development within the enterprise results in stronger interconnection of functional areas previously isolated on the whole and requires from the individual additional knowledge in adjoining professions, structures and processes in the enterprise to allow all workers/employees to be more responsible in the integrated performance through their daily work.

2. Methodological competencies
   The proactive mental modelling of production processes becomes a necessity as machine operation is more and more performed via screen and keyboard. This means that the operators need cognitive abilities which enable them to deal with the abstract ways of communication by screen and keyboard.
   Due to the integration of functions and the flattening of hierarchies, areas of responsibility move downwards. This implies the need and ability to think and decide, in a holistic context. Developing learning capacities occupies a central place.

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3 Key/Core Competencies (Doc. FPC/94/17 of the European Commission)

3. Social competencies
   Workers/employees must be able to work much more closely and directly with colleagues and other occupational groups. Decision-making at work require effective means of communication both with colleagues and managers in different parts of the enterprise. It requires adequate language skills and also the motivation to discuss working issues with others. New ways of cooperation, for instance within autonomous working groups, need similar competencies.

4. Behaviouristic competencies
   These competencies relate to attitude, behaviour and values, such as work ethics, deontology, respect of the economic goals of the enterprise, acceptance of self-responsibility, etc. and are part of the three former mentioned types of competencies.

1.7. Innovative analysis of the new training needs

It is most important that training systems and programmes are based on continuous up-to-date analysis of the training needs and the constant renewal of training approaches and methods in order to meet the requirements of existing, developing and emerging professional profiles and work situations.

This analysis must take place in a dynamic fashion, along cross-sectorial lines, using up-to-date analytical instruments. In carrying out this analysis, new instruments having a sharper focus, must be developed and widely used.

In relation to the methods, different approaches need indeed to be adopted to effectively identify the training needs of workers within an enterprise, branch, sector or region. The main points here are the active participation of all personnel concerned within this process, and the full consultation with the worker's representatives. In any case, the needs should be analysed with a view to including core/key competencies, more specifically the acquisition of methodological and social competencies.

Standard methods for analysing qualification needs tend to rely either on an analysis of the technology or on a job-rating system. Analysis of the technology often results in far too much detail because skills cannot be analysed in terms of technology alone, as they also relate to economic objectives and organisational structures. Job rating methods may avoid some of these pitfalls, but they frequently ignore the future qualification needs likely to arise from new market challenges and technologies. One of the critical failings is that they do not consider the views of the people involved. To foster motivation, flexibility and creativity, it is essential to involve people in areas such as qualification needs analysis.

Standard methods are very different to some of the recent psychological approaches to competence needs analysis based on the action-potential concepts. These new approaches define qualification as a synthesis of cognitive and psycho-social factors related to the performance of a specific action, and derive qualification needs from an analysis of real work-action, including its organisational, social and motivational

aspects. The key feature of this approach is the stress laid on the awareness of the people who are the subjects of the analysis, rather than on the precise nature of the analysis instruments being used.

1.8. Training in core competencies: a methodological issue

As for the relationship between core competencies and training needs analyses, it is to be expected that the type of qualification demands, the situation in the enterprise and changes in work organisation must have an influence on the way and the context in which core qualifications will be acquired.

It must be underlined that innovative training has to be based on the understanding of the links between the different functions of the enterprise: the emphasis is on bringing together different competencies through an integrative approach.

Innovative training must be seen on the basis of the enterprises' need to become more competitive in order to survive in the international competition on open markets. Furthermore, as there are 17m unemployed people in Europe (EU) today, there is a need for new job education and training programmes addressing the unemployed.

For reasons already outlined, **initial** vocational training should be a broadly-based training - not over specialised - but adopting an interdisciplinary approach. The reason here is that nobody can foresee precisely which technical competencies will be needed tomorrow. But there is no doubt that there will be a need for workers/employees who are flexible and capable of adapting to changes.

In this connection the **changing role of the trainers** in the training system must be stressed. Traditionally, training and learning was centred around the knowledge and the know-how of the trainer. Today, training has become a kind of service activity with the aim to provide the enterprise with the necessary human resources, although the personal development of the trainee, as well as the social and cultural environments should not be overlooked.
That is a recommendation of broadly-oriented job training which focuses on the integration of all competencies needed - including social ones.

1.9. Towards a European Competencies Market

Article 127 of the Maastricht Treaty states that "The Community shall implement a vocational training policy which shall support and supplement the action of the Member States, while fully respecting the responsibility of the Member States for the content and organisation of vocational training."

Although this is a clear indication that training systems will remain distinct between the Member States, the labour market to which their target audience is trained is becoming European. Some characteristics with regards to the future labour market are already clearly established; first, stability in the demography is forecasted for the next twenty

years, which implies a reduction in the number of young people entering the labour market and an overall rise in the average age level (although ongoing and future immigration flows with implications on training/education systems and labour markets may alter this situation). Second, there will be greater mobility for certain occupational groups.

With respect to the skills which will be required in the new labour market, other trends are appearing. First, a general raising in the standard of skills in order to develop the more competitive and higher value-added sectors, second, an increasing number of unskilled workers being excluded, and third the need for those already in the labour force to constantly update their skills.

One fundamental factor shaping the European labour market will be the recognition or non-recognition of the skills of workers from one country to another. Other factors involve the provision of information for the potentially job-mobile and for employers, and the development of training policy. The issue of good information is quite important, and it has accordingly been specified in article 127 of the Maastricht Treaty: "develop exchanges of information and experience on issues common to the training systems of the Member States". The comparability of qualifications and their recognition is in the meantime becoming more difficult as they are now the result of a complex mix of general knowledge, vocational know-how and attitudes which today make up the job. In this respect, in view of the large differences that exist among the different Member States (and even inside the Member States) classification system of occupational profiles, in-depth research must be conducted. This process has already started with the establishment of several Commission general directives on the recognition of qualifications.

The interest in a clear updated and recognised classifications and descriptions model is shared by representatives of employers and unions in their dialogue at Community level. This objective will come about through the search for instruments which can help reconstitute occupations and skills on a "people-centred" approach which allows individuals to influence the nature of their work, and which does not only seek to fit individuals to their work. This is the essence of key/core qualifications.

2. TRANSFER OF INNOVATIVE METHODOLOGIES FOR THE PLANNING AND MANAGEMENT OF TRAINING IN THE FRAMEWORK OF HUMAN RESOURCES DEVELOPMENT

2.1. Introduction

Industrial change presents paradoxes, particularly in Europe. At the socio-economic level is the paradox of higher work productivity leading to job losses; at the competitive level the rate of diffusion and transfer of technical innovation remains too slow; and at the macro-economic level massive economic growth produces minuscule employment growth.
Europe has to become more competitive, and changes in market and economic forces pose new challenges, for companies, training organisations and training providers.

- The change from mass markets to customer-oriented markets is characterised by rapidly changing demands, more product variety and changing cost structures.
- The quality of the product is becoming a key competitive factor in the changing market structure.
- Data-processing technologies and their applications in administration and production are providing new options and opening up new challenges for these new markets.
- The motivation and attitudes of the working population in Europe are changing to post-industrial values.
- The development of a Single European Market, alongside the changes in Eastern Europe and increasing competition from Japan and south-east Asia, substantially changes the market conditions for European enterprises.

The changing context of market developments, technological progress and socio-political environments provides a powerful reason to reorganise companies using Computer Integrated Manufacturing in a way that maximises the role of qualified workers. **It is how new technologies are used that will determine the effectiveness of companies in meeting the challenges of changing markets and it is the skills, attitudes and efforts of the people the only weapon capable of reversing the downward trend.**

The FAST programme of the European Commission put forward a European solution to today's manufacturing-productivity-quality assurance challenge in the form of an Anthropocentric Production System (APS).
An APS system can be defined as an approach to production which "depends upon mobilising all the skills and knowledge of the workforce, decentralised decision-making, more collaborative and participative forms of work organisation and computer systems which are designed for increased user control and greater transparency of the whole production process". APS is a European way to contribute to the modernisation of manufacturing. This is based on the diverse strengths of the European manufacturing

base predominantly SMEs using small-batch production, human skills combined with technologies, which are sophisticated but adaptable to users' need.
Many larger European firms are modernising production towards APS today. The implications of this type of system are as follows:

- workshop programming
- integration of conceptual and executive functions
- in highly automated areas: integration of programming, planning, maintenance and processing tasks
- in low automated assembly areas: work enrichment with decision space on execution sequence and performance.

This new integrated concept of learning and working demands new orientations, new ways of working, new methods and new actors in the HRD department of the enterprise. This means cooperating with managers, decision-makers and workers' representatives to transport the learning into all departments and working places within the enterprise.

There is in other words a need for a paradigmatic change in how work is organised and accordingly in how workers are managed: the "learning ability" of enterprises becomes the most important factor in reorganising structures and process within the enterprise, where flexibility and quality are the benchmarks.

2.2. A new organisational paradigm

2.2.1. Why the learning organisation

"A learning organisation is skilled at creating, acquiring and transferring knowledge and at modifying its behaviour to reflect new knowledge."[4]

There at least five reasons for a company to become a learning organisation.

a. Competitive edge
The learning-oriented organisation could help to create and sustain a competitive edge in the context of rapid and accelerating rates of change in markets, technology, demographics and politics at all levels - local, national and global. Conventional approaches to training and development cannot keep pace with the rate of these changes; thus there is a need for an emphasis on continuous learning, in all parts of the enterprise, and for new forms of access to learning to be put in place. At its simplest, the emphasis on and achievement of continuous learning is one way of contributing to the achievement of competitive advantage.

b. Progressive self-transformation
Becoming a learning organisation makes the enterprise less vulnerable to the disruptive impact of change, especially when inertia and stability have led to a progressive build-up of the need for change and this reaches a crisis level. One of the benefits of being a

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4 David A Garvin, 'Building a Learning Organisation', Harvard Business Review, July/August 1993

learning organisation is that the enterprise strives to develop and sustain a continuos capability of self-transformation which becomes a permanent feature of the organisation.

c. The adaptive, flexible, thinking workforce

An emphasis on continuous learning within the enterprise will help to create the thinking, adaptive workforce that is necessary for the full exploitation and use of new technologies (e.g. manufacturing, communication, information, etc.) and the associated new ways of organising work. A learning-oriented workforce within a learning-oriented organisation is more likely to enable the "production workers" of the 1980s to become the "knowledge workers" of the 1990s.

d. Remedial education

There is growing evidence from sources such as the OECD that the educational systems within many countries are failing to achieve the level of numeracy and literacy in their students that many employers require, and so the enterprise may increasingly take on the function of developing basic cognitive skills in the workforce.

e. Team working

In order to achieve the greatest output, of the highest quality, using advanced manufacturing systems and recent developments in information technology, there has to be an increased emphasis on adaptive and flexible team working rather than on highly defined and controlled individual jobs. As a result there is a growing emphasis on the need groups to learn as teams rather than as separate individuals.

2.2.2. What does the learning organisation look like ?

The new organisational paradigm can, be viewed in terms of movement

From	**To**
Standardised integration	Flexible integrated system
Closed system	Open system - external environment
Autocratic management	Horizontal management style, with less layers of management
Mechanistic model of workers- expected to carry out specifically determined activities	Emphasis on: self management / autonomy, responsibility, initiative
Passive formalised training where knowledge seen in terms of rates and procedures	Active self-learning environment

Three critical issues must be addressed before a company can truly become a learning organisation:

- **meaning**: a well-grounded, easy-to-apply definition of a learning organisation
- **management:** clearer operational guidelines for practice
- better tools for **measurement** can assess an organisation's rate and level of learning.

Using these 'three Ms' as a framework the learning organisations can be defined as skilled at five main activities:

- systematic problem-solving
- experimentation with new approaches
- learning from past experience
- learning from the best practices of others
- transferring knowledge quickly and efficiently through the organisation.

The hallmark of the learning organisation is flexible integration.

The new organisational structure is characterised by a flexible, integrated system. This means a company which is decentralised, made up of autonomous work groups, giving greater responsibility to individuals, while at the same time being integrated by common values and agreed strategies. It involves the creation of a corporate or company culture which holds the organisation together. Such a company combines an open approach towards the external environment in relation to the market and to political, social and financial issues, with an open, horizontal human resources policy which emphasises trust, responsibility and initiative.

A company organised along these lines is more open to the external environment, is market driven and is able to move very quickly. It is operating in a growing international environment, so its' products have to be world class in terms of quality and cost. Internally the style of management is horizontal. The company is flatter with less layers of management. Yet the strategic role of senior management takes on more importance in terms of offering leadership and helping people to understand and agree to work to common goals.

Three main organisational changes can be identified:

- a closer integration of functions between pre-production (e.g. design, logistic, etc.) /production and post-production (e.g. customer service) processes;
- horizontal networks and autonomous units organisation to increase visibility of flows and flexibility;
- a redefinition of the division of work (decentralised management and reduction of the hierarchical structure).

2.2.3. How to build up a learning organisation

No learning organisation is built overnight. Success comes from carefully cultivated attitudes, commitments and management processes that accrue slowly and steadily. The first step is to foster an environment conducive to learning, and to convey to employees a sense of their new empowerment within the organisation.

In such an environment there must be time for reflection and analysis, to think about strategic plans, dissect customer needs, assess current work systems and invent new products. Learning is difficult when employees are harried or rushed; it tends to be driven out by the pressures of the moment. Only if top management explicitly frees employees' time for the purpose does learning occur systematically. That time will be doubly productive if employees possess the skills to use it wisely. Training in brainstorming, problem-solving, evaluating experiments, and other core learning skills, is therefore essential.

Another powerful lever is to open up boundaries and stimulate the exchange of ideas. Boundaries inhibit the flow of information; they keep individuals and groups isolated and reinforce preconceptions. Opening up boundaries, with conferences, meetings and project teams, which either cross organisational levels or link the company and its customers and suppliers, ensures a fresh flow of ideas and the chance to consider competing perspectives.

2.3. The changing role of managers and workers to learning in the work place

2.3.1. Changing roles in the workplace

What happens when there is a change in the workplace ? Initially it is often physical and visible, necessitating changes in structure and work design and it can present a complete sense of upheaval. However, the actual function of this change is to support the evolutionary real change in people's attitudes and approach to work and this is brought about by trainers and reinforced by facilitators who become the pioneers of the New Learning Organisation.

Everybody in the Learning Organisation has to learn, from the Chief Executive to operatives on the factory floor. The impetus for change must come from the top and those who first promote the concept must be supported in implementing it. The importance of this was clearly emphasised by speakers from both management and unions at the Irish EUROTECNET Conference in Dublin in April 1994.

Managers in particular must be made aware and trained to deal with a new change of identity. With the introduction of new forms of work organisation, workers acquire new expertise and responsibilities which were previously the role of supervisors and managers in the traditional tayloristic type organisation. Managers will have to learn to let go, instead of telling people what to do. Their job will initially be to show them how to do it and, as the pace of change accelerates, to show them how to find out for themselves. They will have to become trainers, coaches and facilitators.

In the new organisations managers and supervisors are working towards their own redundancy as traditional managers and supervisors. As many of the competencies and responsibilities of middle managers devolve to the group of workers, the need for them as managers diminishes. Therefore they themselves will have to be highly adaptable, open to change and able to adopt the new role of trainer and coach.

2.3.2. New management styles

The organisation of the learning activities within the company determines a certain division of tasks relating to training, where the functions of training professionals and management merge.

Management, (particularly middle management) will have to take on new roles. The middle manager has to become a person capable both of producing new ideas, identifying details not noticed by his team, moderating discussions and motivating his group of workers, and guiding, informing and training its members or supporting them in their efforts.

2.3.3. Manager as Trainer

It is clear from the experience of organisations which have gone down the road of change that training, initial and ongoing, is key to the success of implementing new forms of work organisation. In many instances, the initial training is carried out by outside agencies, either because the necessary expertise does not lie within the organisation itself or because it feels that it needs more objective guidance. The training process should begin with the managers and supervisors who will be responsible for initiating and guiding it. The training will be of a kind which is not so much technical as developmental in nature. It must be aimed at bringing out the personal qualities and giving the personal skills that will enable the managers to come to terms with change themselves and to communicate with and coach and guide others to a similar acceptance.

If managers are not given the necessary skills to deal with this ongoing process of change, the essential development of the new working teams will not take place and so change will be stifled.

2.3.4. New Training Models

How is this training to be delivered ? Traditional methods of training which are external to the organisation and skill oriented will not be the complete answer. Organisations which are changing are not changing in an homogeneous fashion. Few adopt one model and stick to that. The norm appears to be to look at the models and take what is appropriate from each one or to implement several models in different areas of the organisations, depending on their relevance. Training will, therefore, have to be more than ever, adaptable to the needs of the individual organisation. Except for certain technical competencies, the training will be on the job. Where skills relevant to a particular process are being multiplied and working is co-operative in nature, training off the job does not appear to be the answer. Rather, this will be the role of the new

manager and supervisor. They themselves will need constant updating in their training approaches as the new system develops and new needs arise. Just as teams in the Learning Organisation are expected to solve their own problems and work out new ways of doing things, so the Learning Organisation itself will have to be able to foster this ability to learn and grow throughout its personnel.

To achieve this, priority must be given within companies to clearly identifying training needs. There will be a need for careful assessment, elaboration and documentation, so that team members have access to clear training information which they can use for their own development. This will be the joint responsibility of management and the work teams. Managers must learn to listen to workers and use their knowledge and experience in assessing training needs. It will no longer be a one way street, with all knowledge going from top to bottom. Instead it will be a mutual learning process, facilitated by management.

2.3.5. New forms of integration of work and learning: Learning at the Workplace

For a long time, vocational training was characterised by the fact that it involved courses and seminars away from the workplace. The location for learning was the company training room or a training facility outside the company. The workplace was very much in the background as a place of learning. Consequently, one question inevitably had to be asked: "How can the knowledge and skills acquired be applied in practice, or the content of the course be adapted to the needs of the workplace ?" The separation of work and learning has been increasingly opened to question in recent years, and more and more attention has been devoted to basic and continuing training in the workplace.

There will continue to be conventional courses and seminars, but they will be more aimed at providing basic qualifications, while the real continuing training work, so vital for the company, will take place in the context of personnel and organisational development projects.

Work-oriented learning does not only occur in the workplace, but also in workshops or on the premises of external training organisations. Successful work-oriented learning is inextricably linked with learning-oriented work, i.e. the workplace must be designed to promote learning.

Learning-oriented work puts the emphasis on making the workplace encourage employees to learn, and managing this is linked with systematic increases in qualifications. Learning occurs in the workplace in the firm. Work-oriented learning emphasises the transfer of new knowledge into actions and behaviour, i.e. orienting the content of learning towards overall actions required. This can be learnt either within the firm, or in an external training institution. The link between these different approaches lies in the organisational and professional connection between operational and vocational learning. This concept creates a direct link to the role of places of learning in operational and vocational learning.

On the other hand, for these concepts to be implemented, the necessary organisational conditions for training at the workplace need to be fulfilled.

Learning and training in the workplace with relation to the requirements of modern jobs always impose the precondition of providing staff with key qualifications, giving them the ability to adapt their actions to each individual situation. This means that training and learning at the work place where new technologies are used are no longer a supplementary course to the conventional four-step method (Prepare, Demonstrate, Imitate and Practice). What is required are holistic qualifications within the concept of key qualifications, combining theoretical and practical content as well as specialist skills, and those involving several disciplines. Acting independently is a skill which is rated as particularly significant. This target is incorporated in new training methods like training guidance texts, team and project training. The ability to act independently is also emphasised in forms of vocational training. This requirement puts the interchange between the teacher and the learner right at the heart of scientific and didactic discussion.

2.4. Role of the Social Partners in supporting the learning organisation

2.4.1. Future challenges

The business world is faced with the double task of retraining its workforce to operational capability (doing today's work with today's skills), while at the same time preparing for strategic capability (doing tomorrow's work with tomorrow's skills). It will succeed in the latter task only through a close partnership with trade unions, vocational education and training systems and governments i.e. the social partners.

The various issues that these new training and work organisation challenges pose for the Social Partners have been debated at several EUROTECNET transnational conferences and seminars. In particular, at the following: the conference on "New Training Concepts for the Automobile Sector" in Gaggenau, Germany in 1993; the conference on "Industrial Change in Europe", in Birmingham, UK in 1993 and the Irish conference on "Innovations in Human Resource Development in Europe - Key Strategies for the Changing Workforce", in Dublin in 1994. The following is the summary of some of the key options and future challenges for the social partners identified by participants attending these conferences.

2.4.2. Partnerships between vocational training and industry

The concept of partnership between the world of vocational education and training and the world of industry has a long history. To date, the most common form of partnership in Europe has been apprenticeship. A new phenomenon is the realisation of the need to apply this partnership far more comprehensively in order to bridge the gap between the world of education and work which the new skill requirements of today's complex technologies have highlighted.
Central to a world class workforce is the need for a much wider knowledge and skills base. Industry can help to anticipate this knowledge base, but educators, trainers and employers must have a clear understanding of each others nature and primary functions and be actively and jointly involved in education and training activities in order to secure an appropriate balance between the academic and vocational domains.

On the one hand, schools must become more flexible in their approach to learning with an emphasis in their curriculum on problem solving techniques such as these used in industry and introduce a culture of actions based on learning. Enterprises on the other hand must participate in sectoral groups concerned with the quality and content of training and contribute fully through the bodies or structures that are formed at national, regional or sectoral levels for this purpose.

2.4.3. The challenge of change in the workplace - the management / trade union response

Rapidly changing technologies and the need to improve product quality and customer service are forcing changes in how work is organised at the workplace. This in turn is leading to significant changes in management philosophy.

Until recently the traditional management / employee relationships was based on "Tayloristic" management theories to meet the needs of mass production. In this environment the workplace was organised along rigid, hierarchical and functional lines, an approach characterised by a perception of employees as "doers not thinkers" and as extensions of workplace machinery. The advent of more complex technologies and the need for changing work practices and greater employee participation at the workplace, has made manageme aware that a high performance work organisation fully utilises the skill and competencies of its workers.

Equally the trade unions, whose role in the tayloristic organisation was primarily defensive, i.e. concerned with pay and conditions in what was seen by both sides as an adversial environment, are re-appraising their attitudes.

The new imperatives of the workplace and the need for a highly flexible workforce to match technological possibilities, is forcing management and trade unions to move away from the old adversial relationship which precluded the level of employee involvement necessary to secure the adaptability required for new work practices, towards an approach which aims to utilise employee knowledge and experience in planning quality products and eliminating wasteful processes. New production philosophies such as "World Class Manufacturing", "Just in Time", and "Lean Production Systems" are radically changing work practices in the workplace.

Without the opportunity and ability of the workforce to learn no continuous improvement of processes and products is possible, hence the importance that management and unions co-operate in facilitating a culture for learning within the organisation.

Both sides by agreeing to share common goals and aspirations for the enterprises can implement these goals through a culture where the organisation of work and learning, enhances worker participation and develops and uses their skills creatively and effectively. The philosophy of the learning organisation can provide a mechanism for implementing these strategies. Its emphasis on the continuous learning process at both individual and company level, provides for both the individual employees career and skill development needs, as well as addressing the training and learning needs of the

enterprise itself. Recognising this opportunity, employers, unions and governments are formulating new social contracts in which training plays a pivotal role in achieving common economic, social and national goals. At local industry level employer / union shop floor negotiations are now frequently incorporating training strategies as complementary or as an alternative to new terms of pay and work conditions and achieving mutual benefit through greater productivity.

2.4.4. Role of employers and individual employees

Human Resources must be developed from two perspectives of economic competitiveness and social cohesion, it is therefore essential to balance corporate aims with these of individual employees.

For employers the increasing importance of on-the-job training is that job related learning guarantees the highest practices relevant for the workplace. Therefore the onus is on employers to support their staff to gain nationally recognised qualifications. Companies need to encourage their staff to think more creatively about their futures and the ways in which they can develop both their own careers as well as benefiting the company.

There is however a tendency when speaking of social partnership to imply that this means only employers, unions and the state, but the organisation of work is becoming increasingly a matter of decisions by individuals in small groups. These trends have implications for the role of individuals in decisions about training, also the collective representation of workers, many of whom are increasingly outside the framework of collective agreements. This is an area which must not be neglected by the social partners who must develop new strategies for women who need retraining to return to the workforce. And also to increase job opportunities for unemployed workers or those threatened with unemployment and the growing band of temporary / short-time employees in, for example, the construction and service industries. There will be a growing need to create incentives for individuals to acquire their own qualifications and for employers to give employees greater empowerment on the job to shape their own training and learning needs.

2.4.5. The role of the social partners in supporting the Learning Organisation

The issue of qualification has a pivotal role to play on the Learning Organisation. Employers and trade unions over the last few years have undertaken considerable amount of work both at national and European level in trying to establish relevant qualifications in the workplace. The need to identify the key/core skills required by the next generation of workers facing an increasing technological workplace is a challenge which will require the co-operation and support of the social partners for the future.
Another challenge for the social partners is to help establish a system which will enable the qualifications of each Member State to be understood by another in order to facilitate worker mobility and the exchange of know-how and experience between Member States of the European Union.

The active participation of the Social Partners in European Training Programmes such as EUROTECNET and other EU Programmes, is an essential step in raising their awareness of the problems and opportunities to be addressed in this area and to help find common European solutions. The individual Member State can also support new training and learning concepts such as that of the Learning Organisation, by providing a legislative framework as an incentive to achieve the "best practices" and best environment for workplace learning and development.

While the culture of the Learning Organisation cannot cure all the ills of the labour market, it can contribute significantly towards the concerns of the social partners i.e. alleviating both skill shortages and the need to give the employed an unemployed marketable skills to find jobs and develop their own career opportunities.

3. TRAINING PROVIDERS AS INNOVATIVE SERVICE CENTRES FOR ENTERPRISES

3.1. The importance of SMEs for Europe

Many publications and statistics testify to the importance of SMEs in Europe, to the extent that its economic welfare, including employment, depends to a considerable degree on the success or failure of SMEs. Recent research shows that actual growth in employment takes place predominantly in the field of SMEs, demonstrating the importance of these firms in the process of economic growth and employment policies in the new Europe.
A publication of the Commission of the European Communities records that 99.9 % of all firms have between 1 and 499 employees and are counted as SMEs. Only 0.01 % of the enterprises throughout Europe have more than 500 employees and therefore are counted as large enterprises. SMEs provide employment for 71.9 % of all employees.

3.2. The challenges of the '90s for SMEs

Nevertheless, in order to meet the challenges of the 1990s, SMEs in particular will need to bring about some changes. These new challenges can be described as follows:

- Markets are changing from a seller's market for mass-consumption products to a customer-oriented market with quickly-changing demand, wide ranges of products, high quality expectations, changing cost structures and additional requirements for service. The rapid change in diversified customer wishes makes it essential for companies to adopt more flexible structures.

- Efficient use of computer-aided technologies require completely new corporate strategies. New technologies make low-cost manufacture and administration possible, but this can only be achieved where working processes, the entire organisation and work processing systems in the company are reorganised to benefit from them. Unlike the conventional introduction of new machinery, the effective and creative use of the technique of development processes depends on the organisation of the company, of the work, and the personnel development.

- Labour markets are dividing into segments, i.e. skilled workers are becoming scarce, and unqualified labour is fluctuating between unemployment and temporary employment. The supply of qualified labour is not even guaranteed by relatively high unemployment.

- The creation of the European internal market in 1993 and the development of world markets provide new opportunities and challenges. For firms, this means that there is a need to re-direct their strategies, processes and structures. New rationalisation strategies lead to more flexible structures, quality assurance and

acceleration of capital turnover. The manufacture of customer-oriented small production runs mean that quality is increasingly the decisive factor in competition. Alterations in the principles of rationalisation have led to the abolition of Tayloristic management in many areas.

- Changes in values held by the working population with regard to leisure time and more self-determined work is leading to new hierarchical structures in the firm.

- The accelerated change of all external factors requires companies to be able to change rapidly, and to be "learning organisations". This is particularly important because Europe is already lagging behind Europe in certain key technologies.

Some of those challenges brought about by modernisation, such as the qualitative change from mass to customer oriented markets requiring flexibility, quality-assurance and service-orientation from the enterprise, are not new for SMEs. Most of them were never involved in the world of mass production, and their lower resistance to the idea of change allowed many SMEs to develop their ability to react flexibly and in a customer-oriented way to market changes. The advantages of new data processing technologies which allowed large firms to change from mass to special demand production, were equally available to SMEs, enabling them to compete directly for the same markets. Indeed, the restructuring of large enterprises often mimics the organisational patterns: for example establishing integration of functions and direct communication.

Given these points, it may appear that the challenges brought about by modernisation represent a fertile ground for SMEs. Unfortunately, most SMEs were not able to take the opportunity enabled by the introduction of new technology. The introduction of new technology demanded a high capital investment but the main problem experienced by SMEs was the lack of competencies in technology application, work and enterprise organisation and, most importantly, human resource development. Most SMEs still lack these competencies and personnel planning and development is weak. The lack of the prerequisites so as to effectively utilise new technologies often leads to severe economic problems and in some cases, bankruptcy.

3.3. The need for systematic continuing training of employees in SMEs

A new attitude towards organisational and long term personnel development as well as the introduction of systematic further vocational training and learning is therefore necessary.

In a EUROTECNET document on SMEs three specific reasons are given to explain why the continuing training of employees, particularly those of SMEs, may be of great importance in the future.

The new technologies are very new indeed.
Up to now, the introduction of a new technology into a firm was in most cases just a matter of further development of something familiar. New technologies nowadays introduced into companies are the product of advances in micro-electronics, and not only are these new technologies genuinely new for most companies, they also offer a wide variety of completely new applications. The approach adopted thus far does not allow the most effective use of these technologies, and in addition, education has not provided the employees with the basics to process new knowledge on their own.

A competent workforce is a decisive factor in competitiveness.
It is not the implementation of new technologies that is decisive, but rather their effective use. If in the past work was often facilitated by new technologies, this is not the case with information technologies. On the contrary. Since many decisions have to be taken on the shop floor, new technologies require more highly qualified personnel than before.

Qualified employees are no longer to be found on the labour market.
In the next few years, there will be a noticeable drop in the number of young qualified employees available on the labour market. In general, it will be more and more difficult to meet the demand for qualified employees who have, for instance, followed schemes for continuing training or retraining. Companies that are dependent on qualified employees will thus have to seriously consider instituting continuing training measures for their workforce.

3.4. The specific problems of SMEs

In spite of these reasons and political efforts at the level of Member States and at European Community level, there has been little real change in SME behaviour concerning training and personnel development. Research into the activities of SMEs in comparison to large firms shows very little activity and very little financial investment in training.

There are some clear reasons for this, including the lack of SME management competency in training and personnel development matters. SMEs until recently, turned to the labour market for their supply of qualified staff. SMEs also tend to regard training as a privilege for managers or as a special reward for loyal workers, and one which is given only if the financial situation of the firm allows for this "luxury".

But even where these reasons are not valid, there is a characteristic set of problems which make it difficult for SMEs to establish adequate training measures:

- First, SMEs lack the capacity to define their real training needs in the context of enterprise modernisation.

- Second SMEs normally lack the capacity within themselves to plan, organise and implement training and for many, it would be almost impossible to develop that capacity.

- Third, the external training market, provided by training institutions, does not meet the specific demands of a SME. The provision is of a general nature which requires too much time in a classroom situation, away from the job. To produce customised courses for a few employees is simply too expensive. Hence the justified complaint of SMEs is that the delivery of training by training institutions is of little or no use for their training needs.

- Fourth, the tight financial margins within which SMEs operate and the small number of employees, make it very difficult to release employees to attend off-site training programmes. Hence, training costs are proportionally higher for SMEs than for large firms.

- Fifth, most of the training opportunities available in various Member States are designed to meet the needs of large firms, and are used by them, rather than SMEs.

- Finally, the environment and regulations do not sufficiently facilitate training investment.

The importance of SMEs to the economic growth of Europe and the problems these enterprises have to overcome in order to meet the challenges of European and world-markets, have been recognised for some years. Many public discussions have taken place to find solutions to assist SMEs to become more aware and to deliver training activities in a way that meet their specific demand, in an affordable way without hindering the work process.

3.5. What can be done to face the future challenges ?

The following general guidelines to face future challenges were outlined at the EUROTECNET Danish Strategic conference. They summarise the general situation acknowledged by the participants of this conference.

- **Initiatives must be taken to strengthen the strategic planning in the enterprises**. In practical terms this means that the companies must be able to identify their core services/performances, understand their situation within the production vertical, have a clear picture of competitors and customers, adjust internal responses to external conditions and existing resources, etc.

- In general, **personnel planning must be strengthened in the companies**. In a situation where competition is focusing still more on 'High value' production Human Resources Management has become an important competitive parameter. It is necessary to stake more on company internal initiatives, as well as on the interplay between companies and public policies, especially within the fields of training/education and labour market relations.

- The integrated work organisation is promoted by the development of self-learning organisation forms which redefine the needs for education and training to cover not only concrete job specific skills. **Initiatives must be taken to intensify the interplay between the companies' effort on education and training and those of training institutions.**

3.6. The need for a new "training consultancy" approach between training institutions and SMEs

3.6.1. A Virgin Market for Training Institutions

Existing training institutions have enormous problems in selling their services and products to SMEs because it is claimed that the training delivered by external training institutions does not meet their real needs. SMEs represent, therefore, a potential market which is, as yet, untapped. This market cannot, however, be opened without radical changes in the relationship between the training provider and the SME.

It is particularly hard for SMEs to decide about value for money, quality and fitness for purpose when it comes to measures to improve qualifications. Under these conditions, there is increasing demand for training consultancy or training marketing. Within the EUROTECNET Programme, projects and studies have investigated which changes are necessary for training organisations to develop and offer courses tailored to the needs of SMEs. Models are being tested to see how qualification consultancy can be used as an instrument to offer SMEs the service they need to improve their qualifications, and which has not been available until now.

Training marketing should not be understood as an advertising tool for eager training organisations, but rather as a means of preparing qualification-enhancing courses tailored to the needs of SMEs:

> "Training marketing opens up new chances to expand vocational training in small and medium-sized enterprises. It shows vocational training measures in a direct business relationship with economic and technological change in the individual firm. Priority should be given to customised vocational training for the occupational groups concerned. Training marketing also requires re-structuring of the services offered by training organisations: training requirements analysis, vocational training consultancy and specialised courses are items which should complement the services offered. Priority should be given to requirement-oriented combinations of training and learning methods and places of learning in vocational training.
>
> The concept of training marketing arises from a failure of training organisations, which can be characterised as a reference to the persistence with curricular forms and poor service. Training organisations should feel much more inclined to implement marketing strategies which address the actual requirements and level of awareness in small and medium-sized enterprises. Training marketing also requires, first and foremost, that the

training organisations reorganise their own structure to reflect the reality in enterprises. This kind of concept of training marketing is not only important for companies, but also for the training organisations themselves.

3.6.2. The Development of a Marketing Strategy

A strategy designed to open up the SME market to training institutions must focus on the following three main areas: the analysis of the qualification needs; the development of programmes and their delivery-mechanisms; and the evaluation and further planning.

1. The Analysis of Qualification Needs

At the very beginning of this process the experts in the SME and the external Training Institutions present different models of enterprise strategic development to management and to the employees. This includes information concerning technology, markets, work organisation and work-tasks. Using this information, both management and employees are able to work out their ideas for future development and the corresponding qualification needs. These ideas are discussed openly in a moderated scenario session, where the alternative proposals are presented and evaluated. Finally, a commonly agreed needs analysis is worked out and the necessary training measures are implemented.

The ideal way to create an effective qualification pool of qualified workers would be to transform this procedure of qualification needs into a regular meeting of experts from all levels of the enterprise, and external experts from the Training Institutions. Planning groups for further training could be the tool to transform the analysis of qualification needs into a permanent process of organisational development and, at the same time, ensure a long term cooperation between the enterprise and the training institute.

This presents many of the Training Institutions with the challenge to provide new kinds of services. To undertake consultancy and the related moderation and coaching functions also of course calls for additional competencies.

2. The Development and Delivery of Learning/Training Programmes

The development of training concepts, methods and materials normally has to be undertaken by the professionals of the Training Institution. However, the integration of working and learning, of management and training initiatives and the fusion of "job specific" skills with key qualifications, requires continuous cooperation and communication between the professionals of the Training Institutions and the enterprises. The many tasks concerning workplace transformation, project development, multiplier training, etc. need this constant interaction, as well as new competencies from the Training Institutions. Contents, methods and organisation of training have to be combined to create new ways of delivery that are effective and affordable.

The first step is for the staff members to learn about the technology applications and specific qualification requirements. External training professionals provide information, consultancy and process moderation.

The second step is to provide basic training in the specific technological applications. Some new standardised programmes deploying modern learning methods can provide efficient and relevant technological skills training which can run in conjunction with "key qualifications" training.

The third step is to provide training on the new technological equipment bought by a specific enterprise. This training is really only efficient if the employees have basic information about the new technology. Through anticipating the new working situation and asking relevant questions, the learner can gain much from this "hands on" training.

The fourth step, learning near (or at) the workplace, is the most important step in relation to the practical application and utilisation of the skills in the day-to-day working atmosphere. This process has to be fostered through the training of coaches and by means of external supervision..

This "logistic" approach to learning modules allows specific combinations in order to build adequate curricula that meet the practical training needs in enterprises at affordable price levels. The key aspect here is the cooperation between the enterprise and the training institutions. This furthers the relevant "integration of the external factor".

3. Evaluation of Training Measures and Cooperative Quality Control

The history of the evaluation of training is a long and chequered one. Much of it has been concerned with the search for a quantitative method to empirically detect how and why changes in skill, knowledge and attitudes take place. In the scientific field, particularly in the United States, a broad literature exists on summative evaluation, using statistical analysis. There has been some criticism of this approach however mainly relating to the problem of controlling variables and other factors which tend to interfere. It is not necessary to go through the points raised in that debate since it is clear that the type of evaluation of practical cooperation between enterprises and training institutions which is envisaged here is not expected to meet the methodological requirements of scientific evaluation.

The criteria used for a more pragmatic approach put forward here is firstly oriented towards the enterprise's perspective. Clearly the management will want to evaluate the training in relation to economic success (e.g. market relations, cost-reduction, profit, etc.). Having said that, it is nevertheless true that constructing a connection between economic success and training effort is made difficult, if not impossible, because of lack of control over external factors. This does not render the enterprise's perspective, as a central criterion of evaluation invalid, but a better evaluation model is needed.

Beginning with the lowest form of evaluation are those instruments which test the levels of satisfaction of the learners. These instruments are of use only in testing the learning climate as perceived by the learners, during training. They provide no information on the adequacy of contents, methods or the performance of the trainers. The more advanced but very traditional type of evaluation involves tests

related to learning goals on the affective, cognitive and psychomotor level. These tests are useful in assessing the immediate effect of training on the development of knowledge and skills in the climate of the training institution. The problem is that there is often no clear connection between passing the test and managing the real work situation for which training is designed.
The next level of evaluation focuses on the transfer aspect of the training. The criterion here is changed behaviour in the workplace. Have there been any positive developments in relation to work-related performance ? This type of evaluation requires regular observation of work behaviour some months after the training has taken place, which can be done by line management, with some help from the training institution.

While this type of evaluation does not fully address the economic criteria of the management of the enterprise, it could provide sufficient data for the training institution expert and enterprise representatives to jointly assess the impact of the workers' newly learned behaviours on the business results of the enterprise. This level of agreement clearly cannot meet scientific criteria, but it could serve as a source of common understanding to maintain cooperation between the two partners. In this way, evaluation is first seen as a marketing tool, continuing the process of the "integration of the external factor". The ideal result of this type of evaluation would be the detection of new qualification needs, that furthers the cooperation process.

These areas of SME-training institution cooperation outlined above, are separate only at an analytical level. In reality, the concept of the Learning Organisation in relation to SMEs means a network of feedback loops with regard to the different activities. Thus, the feedback from one project is just the beginning of another complex interaction between the enterprise and the training institution.

The marketing strategy of training institutions in relation to "the integration of the external factor", needs a long term perspective. New ideas are called for. The notion of consortia involving several training institutions and enterprises is worth exploring.

The new strategies to be implemented will have an effect on how the training institution is organised and in the type of competencies required by the staff. In particular training institutions will have to develop new consulting competencies.

The central point which is emerging is that the model of the training institution of the future is one whose staff are working in and with the local SMEs, assisting them to become work based centres of learning-Learning Organisations.

3.7. The importance of new partnerships between SMEs and training institutions

It is important to stress again the importance of a new kind of partnership between the Training Providers and the SMEs. This involves a strategy to integrate the external expertise with the SME in a way which does not require the establishment of an internal personnel development department.

For SMEs, the interrelation between the organisation of learning and the organisation of work also means the interrelation between training provider and enterprise. The term Learning Organisation in this case not only defines the restructuring of an enterprise to develop its abilities to learn, but includes an innovative cooperation between a training institution and an enterprise. The whole of this systematic cooperation creates another model of the Learning Organisation. This new entity, comprising an enterprise and a training institution, will involve cooperation in carrying out many tasks. For the SMEs, this refers to work organisation, process orientation, management and training, while for the Training Institution, a restructuring of marketing strategy is required, together with general re-organisation to reflect the reality in enterprises.

The German Strategic conference outlined the necessity for **regional and sectoral cooperation in vocational training**. The improvement in accessibility and suitability of vocational training courses is also a matter of regional policy, which requires companies, and private and public training organisations to work together.

"This is first and foremost a regional policy problem, since those involved in vocational training decisions ultimately go by what is available within an accessible distance. In order to examine possible strategies, it is first a matter of developing a regional policy outlook, and secondly surveying existing regional disparities with regard to qualification potential and supply of vocational training courses (thirdly). Fourthly, appropriate instruments should be discussed".

The regional economic development in recent years has led to an increase in regional disparities. There are still marked differences between industrial centres and rural regions. In particular, remote rural regions suffer from a deficit in highly-developed technologies and a lack of qualified labour. The economic structure in rural regions is usually particularly marked by the presence of small and medium-sized enterprises. In connection with crises in various industries, as in regions with ageing industries, new problems have arisen.

Different regional economic structures inevitably result in a specific version of regional vocational training courses. To counteract the development of regional disparities, or compensate those which already exist, regional cooperation in vocational training is more necessary than ever before. The existence of regional disparities and the need for regional cooperation in vocational training applies to the whole EC. At a European level, people have been waiting for a long time for the "Development of vocational training programmes in connection with regional and local development promotion (...) particularly to reshape and revitalise the regional or local economic enterprise". The need for regional and local cooperation on vocational training matters is viewed in the

same way in all the Member States. Recommendations and conclusions from the experience of selected projects have laid the foundations for multi-actor joint systems, where due to the private-sector structure of the vocational training sector, the coordination of the measures provided by individual organisations should be carried out by a neutral body.

3.8. Conclusions/recommendations

- Training must be oriented to the real needs of enterprises and of end-users;
- There must be increased collaboration between different governmental institutions to provide training for individuals and companies;
- Both sides of industry and governments need to demonstrate commitment to the necessity for "lifelong learning";
- There is a need for a more flexible offer of training (contents, methods, medium, time, location);
- There is a basic need for easier access to information on the training offer.

4. INNOVATIVE PEDAGOGICAL METHODOLOGIES AND APPROACHES

4.1. Trends common to innovative training approaches

A study carried out in France - the results of which were largely used in the EUROTECNET - reveals the following characteristics of innovation in training. Whatever may be the model used, four basic features characterise the innovative systems:

- **the relationship between job and training is the focus of the new forms of action;**
- **autonomy of action is being increased by comparison with organisational forms which form the management and financial support;**
- **"tailor-made" training courses combine the imperatives of standardisation (to guarantee economic viability) with the wish for personalisation (to meet individual expectations and demand);**
- **individualised training patterns go hand in hand with the expansion of autonomy in learning.**

It can be added that there is a determination to decentralise training, by setting it up as close as possible to the work place, and to remove internal barriers both vertically - integrating different hierarchical levels into the same groups - and horizontally - interfacing between various departments - and finally, training is a matter for everyone, and not just for a privileged category of personnel.

The trends are as follows:

Learning situations are more closely related to work situations

Training content is derived from the analysis of the competencies which make up the content of the job, taking into account the individual requirements of employees. Training usually takes place in the workplace, integrated into the work process, and involves the employees of the company - managers, in-house experts, tutors, workers and experienced technicians etc. -

These work situations are considered to be intelligent learning opportunities, and are a significant example of learning islands. The organisation of training is highly dependent on the organisation of working processes; there are no hierarchical barriers, and as far as possible it allows trainees to enter and leave the systems used at all times.

Modular training architectures are set up to enable employees to adapt to the situations they face, while facilitating their participation in training courses which may lead to professional mobility or a change of category. Finally, all the social partners (workers representatives) and business partners of the firm are closely involved in the systems set up, and they either run them directly, or are closely involved in this aspect.

The independence and responsibility of individuals is increasing within working groups, and therefore in training projects

There is a need to integrate teams into the working process, and to increase their autonomy. This new situation implies that employees should be prepared to develop these attitudes and aptitudes. The training methods recommended must be part of this philosophy and propose situations which match these changes.

This has twin consequences. First of all, training courses are standardised as little as possible, or at least, the positioning of the trainees is not carried out on the basis of average standards. The trainees will be taught as a function of the competencies which make up the job they occupy, and for which individualised training paths will be offered. Furthermore, expanding the autonomy of learners implies that the trainees will be co-producers of the training as they are in the new forms of work organisation, which is why there is the trend to self-learning.

This means that new services should be set up by the training bodies (evaluation of existing knowledge, definition of training paths, establishing training contracts) which necessitate both the installation of an information system and the monitoring of the trainees, and therefore management of high-quality training, which allow, in particular, the management of just-in-time training situations.

A marked determination to involve all the actors in training

As the actions are part of changing production and organisation situations, it is necessary to involve all the partners and manage the relationship which the training provider has with them. For this reason, steering committees are usually set up to decide the policy for running the project, and they play a role in validating the results and setting out the changes which are required for the future.

These committees bring together the hierarchical and functional staff of the firm, consultants, formal staff representatives or participants from among the personnel.

There are scientific committees bringing together a sample of these people, the representatives of trainees, training instructors and of course the organisations or functional departments associated with the project. This involvement can have a different character and constitute the driving force of the training and management project, and this is confirmed by all the different forms of participation in, for example strategy groups and variants such as progress groups, quality circles, learning workshops experience transfer groups, etc.

Learning is part of a continuous process

The constantly evolving and changing situation in companies forces them to change continuously, and maintain the systems in use. However, beyond this necessity, there is a marked determination to encourage mobility of employees or working groups. Systems adopted therefore ensure that they update their learning situations, making them as complex and rich as possible, and creating the conditions for self-learning. From an individual viewpoint, it will be a matter, as stated earlier, of encouraging professional mobility and changes of category, but also of combating exclusion within the company by a permanent source of training to facilitate adaptation by employees to changes, and involve them actively in the process of change. The training process is therefore continuous, and is not limited to a commando action or a cyclical action. It is considered as a permanent process which involves setting up a continuous process of analysis of requirements and qualifications and training

strategies enabling these to be achieved; moreover, a process which is designed in stages to encourage the development of employees in the firm.

4.2. The effects of these trends on approaches to training

4.2.1. Effects on methods

The effect of these trends is to force training operators to reconsider both their conceptions and their training and methodological practices. As we said earlier, the need to reconsider the pairing of work and learning forces new ways of training to be devised, allowing the greatest possible interaction between these two terms. As far as possible they are derived from the work carried out within the strategic design and development groups, whatever form these may take.
In parallel to these strategic groups, learning may occur in day to way work on the job, or in forms which simulate the production situation, such as *training firms*. This results in the firm not only being a place for production of goods or services, but a place for learning too. This new situation requires a revision of the training arrangements to ensure that training is integrated into the working process., This implies that new parameters need to be fixed, characterising the training systems to be initiated, developing new tools for individual and collective training, whether or not they make use of new educational technologies, to devise a new space and a new pace for training. In short, the new organisational forms orient work towards learning, and learning towards work.

This also has the effect of forcing a reconsideration of the forms that conventional training provision should take. In particular, methods where the trainees only have a passive role will gradually be dropped in favour of active approaches, more directly linked to the specific requirements of the company and the employee, leading to the new methods used for running groups of trainees, such as metaplan, directed texts, groupware etc. This also leads to new training arrangements which situate the training at an overall level.

4.2.2. Effects on training structures and systems

Beyond the new forms of training examined, it is necessary to develop open training systems which encourage self-learning and organise training courses in a modular way as often as possible. Above all, flexibility is vital for training bodies.

The consequence of this is that:

- relationships between firms and training bodies are tending to become long term partnerships;
- training bodies no longer offer finished products, but are extending their product range to processes including requirements analysis, creation of new approaches, evaluation and follow-up;
- training bodies tend to be organised as learning organisations. This means that there is a removal of barriers between functions and decentralisation of

decision-making: there is no longer a clear separation between sellers of training, designers and training instructors. There is teamwork on projects.;

- internal organisations are changing: horizontal internal networks are being set up by the creation of structures seeking to analyse the functioning of the organisation, and carry out a constant process, to perform quality control of services/finished products.

From another viewpoint, that of the training market, the need for innovation leads training bodies, who are also businesses, to be subject to, and to react to the same constraints as those experienced by companies manufacturing products and services. In particular, they need to develop a strategy for managing innovation. It is essential for them to be capable of exploiting innovation as a strategic development resource, and as a catalyst for generating value. It is necessary for them to organise a future watch, by creating a function of "change sentry" and as research and development is expensive, to make appropriate alliances to reduce the costs.

4.2.3. Effects on the actors

Training professions are changing. The new trainer-consultant must be capable of performing consultancy assignments, i.e.: analyse the requirements of the firm and make it aware of its requirements, set up intervention strategies, and undertake monitoring and evaluation. There is a triple interface profile between the firm and the training institution, between the firm and other institutions (e.g. suppliers firms, training bodies, public decision makers) and between different people in the firm.

The modern trainers have a mission for supporting change, but this function is combined with a role of catalysts for innovation within the trainers' own working environment. They must continually re-define the boundaries of their own function.

These new functions, in particular those provided for customers, are causing some problems. The question of funding this work is particularly poignant.

In the private market, firms buying a product would accept funding the cost of this additional work. In the public training market, on the other hand, decision makers are more used to only funding the direct cost of delivering training, and it would not be so easy for them to pay these additional costs. If the policy on continuing training does not allow this, these new activities could find it difficult to develop and spread.

5. CONCLUSIONS

Industrial change presents phenomena and paradoxes, particularly in Europe. At the socio-economic level there is the paradox of higher work productivity leading to jobs losses; at the competitive level the rate of diffusion and transfer of technical innovation remains too slow. And at the macro-economic level massive economic growth delivers minuscule employment growth. This means that the changes in market and economic forces are posing new challenges for companies.

Data processing technologies and their applications in administration and production are providing new options and opening up new challenges for these new markets.

The change from mass to customer-oriented markets is characterised by rapidly changing demands, more product variety and changing cost-structures. The quality of the product becomes a key competitive factor.

The motivation and attitudes of the working population in Europe are changing to post-industrial values.

The development of a Single Market in Europe, alongside the changes in Eastern Europe and increasing competition from Japan and South-East-Asia, substantially change the market conditions for European enterprises.

The changing world of market developments, technological progress and socio-political environments is the most powerful reason to reorganise firms using Computer Integrated Manufacturing in a way which maximises the role of qualified workers. It is how new technologies are used which will determine their effectiveness in meeting the challenges of changing markets.

In adapting to changing markets and economic demands, the "learning ability" of enterprises becomes the most important factor in re-organising structures and processes within the enterprise, where flexibility and quality are the benchmarks.

Radical changes therefore are needed if Europe's human resource potential is to match the demands of new markets and to remain competitive in those markets. Quality in performance and product is the key to success and just as this requires far-reaching changes in the way in which work is carried out and the companies are organised, so also will it affect the very nature of training and the process of learning within an organisation.

The vocational training systems must respond to these new needs in a holistic and integrated way. Workers' abilities and competencies must be raised in virtually every sphere - in what are termed the new key/core competencies related to knowledge and cognitive skills, social skills, general and work related personality characteristics together with a high level of technological ability.

At the same time, there is a need for a paradigmatic change in how work is organised and accordingly in how workers are managed. In today's business environment, the Tayloristic approach to work organisation is economically inefficient. Within manufacturing industry long cycle assembly work gives significant increases in productivity. It also fosters higher levels of learning and worker competence.

But innovation must be very well managed. John Dewey, the educational philosopher defined learning as the continual process of discovering insights, investing new possibilities for action, producing the actions, and observing the consequences, leading to new insights. When the learning process is dysfunctional, the consequences may be far-reaching:

> *"Learning disabilities are tragic in children, but they are fatal in organisations. Because of them, few enterprises live even half as long as a person - most die before they reach the age of forty".*

The philosophy of European training programmes and networks should therefore be one of mutual learning with a concentration on the needs of the individual within the socio-economic context.

5.1. Partnerships - Industry - Training Institutes - Social Partners

There is a gradual increase in the skill levels demanded of job seekers and in the great difficulties encountered by those who have failed to complete initial training. The labour market situation in all the member states of the Community shows that the highest unemployment rates and the persistence of high levels of long-term unemployment are linked to the mismatch between skill needs of firms and the skills available in the workforce. It is those countries that have been the least prepared for and open to qualitative change that are now experiencing the worst mismatches between supply and demand for jobs, accompanied by persistent exclusion from the labour market of under skilled groups and by a consequent upswing in long-term unemployment. The capacity to develop lifelong learning systems, continuing education and training, particularly at the workplace, has therefore a central role to play in the strategy for the future and in the development of an active society able to cope with the economic, technological, cultural and social changes of the 1990s and beyond and to face competition, from all parts of the world.

Technology is changing at such a rapid pace that now more than ever workers are needed who can problem-solve, think critically and adapt to rapid changes in technology. Good attitudes alone in employees will not suffice.

The whole concept of "continuous quality improvement" is also very important. The idea behind this is that you do it right the first time, and ensure that you continually attempt to improve on your processes.

The lasting quality and effectiveness of a system depend on its adaptability. How flexible and innovative is the system ?

Can it bring about the adjustments expected of it at this time ? This question is posed on two levels:

- quantitatively, with regard to the availability of training positions to satisfy both the needs of the employment system and the demand of young people/adults; and
- qualitatively, relative to changing attitudes and requirements from the corporate and individual perspectives as a result of structural changes, technological and organisational innovations, as well as changing social values and personal lifestyles.

The concept of partnership between the world of vocational education and training and the world of industry has a long history. Partnership has taken many forms, notably apprenticeship and the alternance approach in Europe. A new phenomenon is our realisation of the need to apply the concept of partnership between industry and the vocational education and training system far more broadly.

Vocational education and training approaches which combine theoretical learning with practical workplace application need to be extended to all, or most, levels of training, right up to that of the university. To bridge the gap between education and work, both educators and employers need to be actively and jointly involved with education and training.

There is a growing acknowledgement that central to a world-class workforce is a much wider knowledge and skills base than we achieve at present. This implies greater participation in post-compulsory higher technical education and training, at intermediate level, below that of university. Yet, currently, in most countries - though not all, Germany being one exception, and Denmark another - higher status is placed on academic education and the university or college-bound student than on technical/vocational education and the work-bound student. At issue is the reality that academic education is highly valued, while technical/vocational education is undervalued. Recruitment to technical training suffers from the fact that the playing-field is not level as between technical and academic education. The status and rewards for a student pursuing technical/vocational courses or programmes need to be improved if a better balance is to be established.

A new concern with quality has now become widespread in all sectors of Western economies and is beginning to reach the education and training systems.
The demand for higher standards and changes in industrial processes are leading to industry placing higher value on the so-called foundation or general skills or competencies. Higher quality also calls for greater mastery of basic subjects and higher order thinking skills, as well as process skills such as communication and teamwork, the so called key/core qualification. As the speed of change increases, new jobs and skills profiles are evolving faster. Attention to quality requires a capacity to respond faster to change. For employers this means faster processes of consultation with education and training providers; for providers, it calls for a capability to respond rapidly to new workforce training needs. For both, it implies a need to rethink how initial training is, or

should be, linked to continuing training, i.e. life-long learning, and how participation in the latter should be related to career advancement.

Vocational education and training cannot remain purely a matter of national or regional concern, nor the preserve of education and training establishments. Input from industry is also essential. Those countries where technical and vocational training are organised with the active help of industry are visibly more successful than those where this is not the case.
Industry can help to anticipate the knowledge base which will be needed in the years ahead, and press for it to be put into position. More effort must be devoted to preparing people for strategic capability. Many of tomorrow's jobs cannot be envisaged today.
However, of course partnership is not an end in itself, but a means to achieve goals - to obtain results better than those achieved by vocational education and training or industry working alone.

To achieve results:

- each side must have a clear understanding of the nature and primary functions of the other
- each should integrate in their institutional mission and plan a strategy for cooperation with each other.

We are in an era when solutions to developing and sustaining a quality world class workforce depend increasingly on partnership between education and training providers and industry; and between them and government, at all levels. Partnerships provide the means for linking the classroom and the workplace, for diversifying provision, for speeding up our response to changing needs, and for developing links between initial and continuing training.

Basic requirements are structures and agreements that clarify the roles and responsibilities at each level, so that partnerships can form and function smoothly. All partners should be involved in creating the conditions, in terms of financial and staff support, for effective partnership models. Governments must play their part by setting the right climate and encouraging partnership development. The development of a consensus about the importance of training in areas or sectors which lack it for historical reasons is a necessary and long-term task also. So is the development of a system of training, both initial and continuing, and of certifying it, which reflects the characteristics outlined here.

Firms must participate in sectorial groups concerned with the quality and content of training, through whatever bodies or structures are formed at national, regional or sectorial levels for this purpose. At the local level, they should help schools, colleges and training bodies to train students on up-to-date equipment, e.g. by offering access to such machines in their plant or by placing them in the technical training institution itself. They should accept teachers, especially those responsible for career guidance in high schools, into their firms on placements, to help them learn about the reality of modern industry.

The route to a quality work-force includes placing more emphasis on progression; on giving greater equality of status to the technical-vocational pathways; and on paying more attention to the needs of those who now fail to become qualified. These priorities, and the need to pay more regard to quality in its many different forms, illustrate well the need for partnership action, since they are not matters which the school or college system can carry out alone.
Special attention should be focused on the training needs of small and medium-sized firms. The special structures and procedures required to engage them in the training and retraining process should be developed. Partnerships was the main focus of the conference in The Netherlands and Ireland.

5.2. Paradigmatic changes

THE SHIFTS IN ATTITUDE AND BEHAVIOUR REQUIRED FOR HIGH PERFORMANCE WORK AND LEARNING

A number of fundamental traditional customs and practices must change if the European workforce is to reach its optimal level of competence. These relate to the traditional perceptions and values concerning training and development, separation of education and training, traditional industrial relations, restrictive work practices, work demarcation and limited local or national focus.

These issues and their often unintentional negative results need to be debated intra and inter the tripartite structures of enterprise, workers and vocational education and training representatives.

1. **Training and Development ➡ Integrated Enterprise Learning**

An important conceptual shift, on the journey to the learning enterprise, is from the elite and individual oriented notions of training and development to broader concerns for integrated enterprise learning. This raises important questions, such as, how do teams and networks learn ? How is the concept of a career developed for all employees ? How are all employees developed as professionals who are concerned with quality ?

This is a massive conceptual shift from the traditional notions of training which cannot be transmitted in terms of training alone. There is clearly a need to enunciate a much broader, deeper and changing phenomena. Language can lock people into traditional mind sets.
To break them out of such mind sets, I suggest that it is necessary to use concepts that more clearly evoke the new reality.

This relates to the interlacing of work and learning; of sharing the development, transfer and use of the knowledge and skills; and the development of learning based work organisation. It is not about utilisation rates in a classroom; or trainer controlled, designed and driven processes; or a separation of theory and practice. This is an important conceptual shift from traditions of training and development to ideas for integrated enterprise learning.

Other conceptual shifts which follow from the above analysis are:

- instruction and training ➡ involvement and learning
- individual training ➡ team and network learning
- occupational training ➡ career learning
- functional training ➡ organisational learning
- demarcated training ➡ shared learning
- technical training ➡ socio-technical learning
- skill profiles ➡ skill dynamics

Each of these shifts need to be developed and operationalised to support integrated enterprise learning.
Increasingly, an enterprise's dynamic comparative advantage is related to the ability to absorb, adapt and implement conceptual changes; the ability to integrate innovations in the organisation; and the ability to learn. How does one enterprise learn faster than another ? Such questions are critical to understanding the issues we face in workplace learning.

2. Education and Training ➡ Skill Formation

Perhaps the most critical conceptual shift for understanding human resource developments in many lead enterprises, particularly in Germany and Japan, is the shift from traditions of education and training to skill formation. The dichotomy of education and training has strong class connotations. Teachers are educated, craftsmen are trained. The dichotomy is not very helpful for understanding the needs of people in a changing employment environment.
The concept of skill formation has its origin in Germany but has perhaps been adapted and more broadly developed in leading Japanese enterprises.

The concept of skill formation covers on and off the job learning, initial and continuing skilling and is not constrained by institutional arrangements and thinking about curriculum's and methods of teaching. It is above all a learner centred concept. Nor is it constrained by front end models of education and training. It is essentially concerned with how skills are formed over a life time.

At the enterprise level, concern for skill formation has lead to more systematic interlacing of theory and practice, particularly through the development of learning based work organisation and career systems. This in turn, has led to concern for more systematic interlacing of on-the-job and off-the-job learning. These shifts are critical if enterprises are to establish processes for the just-in-time development of skills to meet changes in markets, technologies and organisations.
In many western societies the professionalising of training resulted in a separation of practice and theory, of work and learning and of off-the-job training and on-the-job learning. Such separations continue because many people are locked into traditional notions of training. Other conceptual shifts which follow from the above analysis are:

- retraining ➡ recurrent skill formation
- on-the-job training ➡ workplace learning

3. Education and Training ➡ Continual Skill Formation

An important conceptual shift is from the traditional and false dichotomy of education and training to the more integrating concept of continual skill formation. That is, from a front end model of class room instruction, to a life long model of learning.

At the enterprise, this means a more systematic interlacing of theory and practice, through the development of learning based work organisations. It means, also, a more systematic interlacing of on-the-job and off-the-job learning.
These shifts mean changing enterprise mind sets away from the traditional narrow focus of training to a more broader focus of learning which includes reforming the workplace to allow the integration of work and learning.

The current emphasis on multi-skilling is, still, too narrowly conceived in terms of cross-trade training. It needs to shift such narrow occupational mind sets to broader notions of skilling for a career.

Total Quality, of course, demands that enterprises shift from skilling people for a job to skilling people for continual improvement. But what does that mean in reality ?

4. Traditional Industrial Relations ➡ Total Quality Relations

Perhaps the greatest challenge for management's, unions and employees is to make the shift from traditional industrial relations to total quality relations. This means breaking away from 200 years of adversarial relations to develop participative process and values which support joint problem solving. To do this, both unions and management's will need to free themselves from their traditions of authoritarian control to enable them to develop participative process and values which will help them create shared commitment and trust.

Traditional industrial relations, is bedevilled by restrictive work practices created by management's, unions and work groups; and sustained by notions of custom, practice and precedent.

In the industry today, many workers cannot use skills acquired and used in the industry in the past. This will not change significantly until the workplace is defined by all concerned as a place of open learning.
This would mean a shift from an industrial relations mind set to a learning mind set where skill formation is the critical concern.
These critical shifts require further conceptual and practical changes from information control to information sharing; skills hoarding to skills sharing; and, from custom practice to continual improvement.

5. Restrictive Work Practices ➡ Open Workplace Learning

In many tradition based enterprises, industries and occupations, learning is constrained by restrictive work practices created and maintained by management, unions and occupational groups. These barriers to learning are sustained by reference to custom, precedent and tradition.

To free people and enterprises from the problems of demarcation, it is necessary to conceptually shift from narrow notions of job preservation by restrictive practices to more open notions of skill formation by open workplace learning. This means redefining demarcations to show how they:

- restrict learning opportunities;
- restrict employment and market opportunities;
- restrict mastery of new systems technologies; and
- restrict human and organisational development.

The conceptual and practical shift to open workplace learning is essential to support the development of work teams. It is critical also for supporting the shift from:

- skills hoarding ➡ skills sharing
- information control ➡ information sharing
- division of labour ➡ balance of skills

These shifts will not occur if the workplace is defined and organised in terms of traditional control systems.

6. Unintended Consequences of Traditional Demarcations

To free enterprises from the many problems of demarcations it is necessary to take them out of the industrial relations area. Demarcations need to be redefined in terms of:

- reduced learning opportunities
- reduced employment and market opportunities
- reduced mastery of new systems technologies
- waste of human, organisations and physical resources

7. Learning Leave ➡ Learning Time

Learning leave assumes people need to lave work to learn. It also assumes that there are appropriate external skill providers. Both these assumptions may be false. Shift workers provide an example of this. Shift workers have always been second class citizens in terms of their access to structural formation. No public technical and further education system catered for the needs of shift workers. Nor did the developers of traditional shift systems design them in terms of the learning needs of the shift worker. These are however of increasing concern for shift workers who operate complex technologies and are required to meet continual improvement in quality and service.

8. National Focus ➡ International Focus

Critical to achieving skill formation and workplace reform in enterprises is the widespread understanding and acceptance of meeting international standards. Enterprises in different cultures and industries are increasingly required to, concurrently, meet international standards of quality, adaptability, reliability, improvement, innovation, customisation, service and leadership.

To meet these diverse demands, enterprises need to create processes for achieving a diversity of conceptual changes and integrated innovations in participative work organisation, technology, skill formation and employment relations.

These conceptual changes are absorbed and applied in enterprises and employees who were able to reframe their perceptions of reality. This gives them the opportunity to break away from the conventional wisdom and their visions of the past and create new visions of the future.

The successful transplanting of conceptual changes and integrated innovations is not a simple packaging and delivery operation. It is complex and requires the dedicated talents, energy and time of wide variety of participants. It requires a **Learning Organisation**

5.3. The Lifelong Learning Continuum - a Survival Concept for the 21st Century

In discussing any future development of innovative concepts surrounding continual vocational training, the emergence of the notion of Lifelong Learning must be given clear consideration. Is this the next concept following on from continuing vocational training ?

Definition:
Lifelong Learning is the development of Human Potential through a Continuously Supportive Process which Stimulates and Empowers Individuals to Acquire all the Knowledge, Values, Skills and Understanding they will require throughout their Lifetimes And to Apply them with Confidence, Creativity and Enjoyment in all Roles, Circumstances and Environments. (European Life long Learning Initiative November 1994).

The need for Lifelong Learning in the socio-economic perspective

There are very good reasons why Lifelong Learning has now become an important concept:

- ... the accelerating pace of technological change produces an accelerating need for up to date and effective education, training and re-training;
- ... the vital significance of developments in science and technology as generators of wealth increases the level, complexity and importance of education and training in knowledge and information based topics and industries;
- ... the increasing requirement in organisations, for a skill or competence resource base;
- ... the consequent demands made upon a much wider spectrum of people to remain updated and flexible in their career and skill choices which extends the target population for continuing education and training.

Education and Training providers, whether in industry, university, schools or training institutes, now have a new imperative - that of creating a flexible and adaptable curriculum which generates skilled and versatile people and which lasts throughout life - in a phrase, Lifelong Learning.

It would not be an exaggeration to suggest that the survival of an advanced technological society as a whole depends on the development of Lifelong Learning skills and attitudes as a part of a national culture. What is true for societies is also true for organisations. The smarter company and the more aware vocational education and training institutes are already exploring the challenges, implications and opportunities of Lifelong Learning - as a matter of survival in the longer term.

Lifelong Learning challenges the accepted paradigms of education and training practice development over many years. In the mature society, the intelligent company, effective education and training is not just a series of courses and curricula designed to fill knowledge deficiencies. Rather it is the development of a positive attitude of mind in each individual which puts the emphasis on learning and on turning information and knowledge into insight and understanding. In moving the focus to learning it becomes as much a revolution for the individual as an evolution for society as a whole.

The ideological vision and political will to implement Lifelong Learning strategies is not yet evident in the Member States which make up the European continent. The link between learning skills and attitudes and economic well-being has yet to be fully accepted in principle altogether apart from practice.

Lifelong Learning and the work place

When we look at the more successful modern companies we see that most of them have a strong commitment to Education and Training which enables them to survive in a difficult competitive world. In many of these, this commitment goes beyond the need to train for business goals - it includes the personal growth of each of their employees and thereby encourages a reciprocal loyalty and commitment to the company. This has benefits for all; first for the employee - a better and more fulfilled lifestyle, and greater preparation for career change. Second for the employer - the creation of a team spirit and a hidden competitive advantage which shows itself in the year end financial statement. Third for education and training, whether in-company or in collaboration with Vocation, Education and Training institutes.

Major global political and social upheavals have changed the nature of work, life, leisure and learning. Concepts of Lifelong Learning are taking on greater urgency. Education is going through a paradigm change in favour of putting the focus on Learning and on the individual's responsibility to define it and invest in it as a means of realising his or her own potential. Among the many current and future issues contribute to this change and which increase the urgency for a Lifelong Learning approach are:

First, the explosion of information and knowledge. Through the application of Science and Technology, on the one hand offering a variety of new opportunities for organisational and personal growth and on the other simulating a questioning of basic

values. Both of these have important implications for Lifelong Learning. At one level, Science and Technology has helped to improve material standards of living in many parts of the world. It has multiplied manifold the information and knowledge available to us and transformed our way of living, working and communicating. At the same time the speed at which these changes have taken place has outstripped the capacity of many people to cope easily with it. The wealth of information and the technology of handling it has, paradoxically, made possible greater personal decision making; and; through its sheer volume, reduced the likelihood of this being informed and balanced.
The skills of information-handling, problem-solving, reflecting and thinking, study and learning, cooperating, entrepreneurship and others become more urgent to make best advantage of this new empowerment.

And second, the restructuring of industry into core units bring in knowledge and expertise where it is required and from where it is available. This has a powerful effect upon both the nature and the incidence of employment structures and the creation of many more smaller and specialised satellite companies which concentrate on satisfying specialised needs. In turn it has a further powerful effect on the need for education systems to create more self-sufficient, creative and flexible people who can adapt to the needs as they change and yet can apply themselves continuously to updating their skills and knowledge - people, in effect with Lifelong Learning skills.
Industry will not solve its competence or competitivity problems by taking only the short-term view. Companies must think strategically and accept some responsibility for developing and providing Lifelong Learning opportunities. (Recommendation of the European Round Table of Industrialisation 1993).

'An educated workforce learns how to exploit new technology- An ignorant one becomes its victim' (Tom Stonier - The Wealth of Information) - and there is much still to do at a basic level to produce an educated workforce.

Many companies are now in a position to plan both their educational development and their delivery needs for the future, and the opportunity now exists to help them appreciate how the accumulation of so many techniques and tools into one Education and Training function not only **helps to satisfy immediate training needs at many levels, but also can** form the basis for a coherent and holistic look at Lifelong Learning as an investment in human resource. Much still needs to be done in the design of local learning centres, educational systems analysis, the availability of easy-to-access information sources etc., but the emphasis is now upon the coherence of all concepts and tools rather than their development in isolation from each other.

From this brief elaboration of the definition, the need for and the practice of Lifelong Learning, it is clear that this concept is the natural and logical next step to continuing vocational training. The debate on its implementation by the vocational education and training system and the world of industry should now be launched.

5.4. The six principles guiding Vocational Training

For all training institutes and training providers in Europe, the response to industry needs should be guided by a number of integrated and interdependent principles.

Place skills development within a comprehensive improvement strategy

Manufacturing improvement is complex. Firms attempt interdependent and often simultaneous development of their design and production technologies, worker skills, work organisation, market focus, customer and supplier relationships, and management practices. Programmes focused only on training may fail. Education and training programs should integrate skills development into a comprehensive integrated strategy.

Strive for high performance work organisation

High performance work organisations fully use workers' skills, involving them in the planning and implementation of changes at the firm. The public and private sectors will benefit little from investments in education and training unless new skills are deployed in firms where the organisation of work enhances worker participation and uses skills effectively. Workers and managers are far more likely to seek and apply higher skills if they have direct responsibility for organisational performance and customer satisfaction and can act on that responsibility. For the modernising firm, worker participation is a key business strategy. Training providers should help firms link training to work reorganisation. New modes of work must increase the capability and commitment of workers and help build formal and informal learning systems within firms.

Make learning, not just training, the goal

As the pace of economic and technological change accelerates, the ability of workers and enterprises to learn and adapt becomes a core element in the global competition among corporations and national economies. Manufacturing enterprises acquire much of the new products, and plan, implement, and optimise new design and production technologies and methods. SMEs strengthen regional economies when their cultures, work processes, and structures capture knowledge and encourage collaborative learning.

Embed skill enhancement in work processes

Workers learn new skills best on the job. Work provides them with a context that links application of new knowledge to work interests and career goals. On-the-job training should be structured to enhance the skills and knowledge of workers performing modern work processes. Education and training should be embedded in the new design and process technologies used by SMEs. SMEs will gain most from their limited resources when they invest in work-based learning. SMEs generally avoid elaborate, formal training systems but will use ones that allow workers to learn as they produce.

Promote the consortium approach by groups of firms committed to joint learning

The great challenge of developing skills for industrial modernisation dictates a consortium strategy. There is really no other way to enhance the skills of workers in SMEs. New public investments in the skills of the current industrial workforce should, like the rest of the modernisation system, promote inter-firm co-operation. Consortium approaches use finite funds efficiently, aggregate demand of modernising firms, enhance their market power, promote virtuous peer pressure, influence and support the innovations of individual lead companies, and harvest best practice from team work.

Integrate the active participation of the Social Partners

Along with the convergence of interest between management and trade unions in ensuring survival in the global market, both sides have a great deal to contribute to the vocational training debate. It is the collective competence of an enterprise which gives it its competitive position and so it becomes an imperative for success and effectiveness to integrate the active participation of the social partners in the identification, planning, organisation and evaluation of all vocational education and training.

5.5. The remaining challenges

What can be reasonably concluded is that the biggest challenge is for the organisation of learning for the acquisition of the new competencies for general workers. We do not yet know how to train our clients to meet these needs. We are adopting trial and error approaches. We are in a reactive mode, responding to industry's needs after the event, discussing the new multi-skilling, polyvalent, key/core qualifications but having no clear plan on how or in what definitive way the new skills will be acquired. Even as we move towards the learning organisation with its radical implications for change in work organisation, training methodology and qualifications structures, we are not at all really ready to bring about the development of the new qualifications.

Certainly not in the transferable professional way to a predetermined standard, in a transparent methodology and to a certifiable or demonstrable application.

We must be able to clearly articulate how the new competencies are acquired. We must know the concepts, methods and strategies for the effective transfer of learning.
We need to develop our learning theories into practical instruments, we need speedy and reliable research, we clearly need a new reliable Hawthorne - here in Europe 60 years on.

We must be able to show - to prove that the new concepts are significantly more economically efficient than the traditional models.

We must at least demonstrate to our clients, to the relevant people and to industry what is possible, what it is that people are capable of achieving.

We must face up to our difficulties and problems and realise that the need for innovation in training is growing perhaps even faster than technological advance.

The standard of living and the quality of working life of our fellow human beings is at stake. It is an awesome responsibility. There is so much to be done and so little time available, but it can be done if there is a spirit of enthusiasm, determination and cooperation. Socrates said that a properly articulated problem was already halfway solved. It we accept this, then perhaps we are also half way to properly covering the demands of training.

The Vocational Education and Training systems must now recognise the needs of industry and convert this to the needs of trainees.
In doing so, the VET systems have a responsibility to give clear professional and active leadership and not to slavishly accept the often short term reactive needs articulated by the world of capital.

It must expand its own paradigms, its value systems, to take account of the new demands and, in so doing, greatly elaborate and expand the definitions and meanings to take account of how a learning enterprise or learning organisation should function.

Finally, the vocational training system must ensure that its own organisations are also open, learning ones, where the weak can become strong and the strong can use their talents to the full.

APPENDIX I

THE EUROTECNET NATIONAL STRATEGIC CONFERENCES

Germany	"Further Training for SMEs", Oberhof, 19-20 October 1992
United Kingdom	"Economy in Production", Durham, 2-3 November 1992
Italy	"Experiences and perspectives of Innovation in the field of Vocational Training", Rome, 5-6 November 1992
Portugal	"The Training Engineer in New Technologies", Lisbon, 16-17 November 1992
Belgium Fl	"The Trainer as a consultant in a changing Work Organisation", Oostende, 14-15 December 1992
Luxembourg	"The Multimedia approach in Vocational Training", Luxembourg, 15-16 December
Netherlands	"Linkage between Industry and Education and Training", 's-Hertogenbosch, 8-9 February 1993
Ireland	"Managing Innovation in Training and Education", Dublin, 18-19 February 1993
France	"New Competencies, flexible training responses and transnational Partnerships", Paris, 18-19 February 1993
Denmark	How do the Training Centres Cope with the New Trends ?, Copenhagen, 23-24-25 February 1993
Greece	"The Trainer as a Learning and Development Agent in a Changing Work Environment", Athens, 4-5 March 1993
Spain	"Curriculum Development and New Professional Qualifications", Madrid, 19-20 April 1993

APPENDIX II

PUBLICATIONS LIST

November 1994

BOOKS - PAPERS - REPORTS AROUND QUALIFICATIONS, TECHNOLOGY AND LEARNING

Language abbreviations

DA = Danish
DE = German
EN = English
ES = Spanish
FR = French
GR = Greek
IT = Italian
NL = Dutch
PT = Portuguese

( ) = in preparation

A. Key Qualifications

Ref. 013

* **The Impact of New Technology on Qualifications**: *A EUROTECNET Perspective, by Jack Horgan, June 1991, 10 p.*
EN

Ref. 018

* **Key Core Qualifications**: *Their Requirement in the New Technological Global Market, by Jack Horgan, July 1991, 52 p.*
EN

Ref. 038

* **Innovative Training Needs Analysis with a special focus on core qualifications**, *EUROTECNET Transnational Conference, Copenhagen, 2-3 June 1994. Draft synthesis report available.*
EN

Ref. 043

* **Key/Core Competencies**: *Synthesis of related work undertaken within the EUROTECNET Programme (1990-1994), drafted by René van Neuss and Hélène Barry, 1994, 80 p. (Doc. FPC/94/17)*
EN, FR

see also sections C (CIM and SME) and D (Training & LearningMethodologies/ Organisation)

B. Sectoral Approach

Ref. 003

* **New Technologies and Qualifications for the Wood-Machining Branch**, *Report on the EUROTECNET Workshop, Esjberg (DK), 11-12 June 1990, 37 p.*
DA, EN, FR, NL

Ref. 006

* **The need for Innovative Training in the Financial Services Sector**, *by Jack Horgan, with a preface by Ricardo Charters d'Azevedo, Brussels: Commission of the European Communities, November 1990, 23 p.*
EN

Ref. 007

* **Capital People**: *The 1st European Conference on Human Resource Strategies in Financial Services: A joint European Commission/UK Department of Employment Conference Report, ed. by Anne Bagamery, 41 p.*
EN, FR, IT

Ref. 024

* **Environmental Qualifications and Competencies**: *EUROTECNET Conference, León (E), 28-29 April 1992, 29 p.*
EN, ES, FR

Ref. 028

* **New Qualifications and Skills in the Construction Industry**, *Paris, 23-25 November 1992, by Sylvie Osterrieth, Alain Dupeyron, Marie-José Fleury, Philippe Morin, Brussels, 1993, 65 p.*
EN, FR

C. CIM and SME

Ref. 019

* **Computer Integrated Manufacturing**: *Skills and Qualification issues for Small and Medium sized Enterprises, ed. by the Commission of the European Communities - Task Force Human Resources, Education, Training and Youth in the framework of the EUROTECNET Programme, Luxembourg: Office for Official Publications of the European Communities, 1991, 51 p., (Document)*
DA, DE, EN, ES, FR, GR, IT, NL, PT

Ref. 020

* **CIM - Significance for Further Education in Small and Medium Sized Enterprises**: *EUROTECNET Workshop from 16-17 October 1991 at Elmshorn* (D), report by Dr. Eng. Martina *Klokke, 68 p.*
DE, EN, FR

D. Training & Learning Methodologies / Organisation

Ref. 005

* **Innovation in Training**: *Report on European Workshop at Blenheim, Oxford, November 1990, by Barry Nyhan, 55 p.*
EN

Ref. 008

* **Design of Open Learning/Multimedia within an overall vocational training framework**: *Report from a EUROTECNET Workshop held in Dublin (IRL), 9-11 December 1990, 85 p.*
EN

Ref. 010

* **Developing People's Ability to Learn**: *European Perspectives on Self-Learning Competency and Technological Change, ed. by Barry Nyhan, Brussels: European Interuniversity Press, 1991, 183 p.*
DE, EN, FR, PT

Ref. 011

* **Development of Qualification through self-regulated Learning**: *Report of the EUROTECNET Workshop on "Self-regulated Learning" 22-24 May 1991 at Potsdam (D), report compiled by Sabine Manning and ed. by Marjo Steinbusch, 64 p.*
DE, EN, FR

Ref. 016

* **Innovative Training Approaches in the Raising of Qualifications**: *Report on the EUROTECNET Conference held at Luxembourg, 13-15 May 1991, by Marc Ant, 89 p.*
DE, EN, FR

Ref. 017

* **Promoting Innovation in Training**: *EUROTECNET Conference in Montpellier, 17-19 April 1991: Final Report, by Gabriel Fragnière, 98 p.*
DE, EN, FR

Ref. 025

* **Vocational Training in the new German Bundesländer**: *Synthesis, by Eckart Severing and Franz Worscheck, Brussels: EUROTECNET, 1992, 61 p.*
DE, EN, FR
Full report available in DE

Ref. 026

* **The Learning Organisation: A Vision for Human Resource Development**, *by Thomas Stahl, Barry Nyhan & Piera D'Aloja, Brussels, December 1992, 100 p.*
DA, DE, EN, ES, FR, IT, NL, PT (GR)

Ref. 030

* **Meeting the Learning Challenge of the 90's: The Place of Learning Technology**, *paper presented by Barry Nyhan at the FORCE "Training for the Future" Conference at the IBM International Training Centre, La Hulpe (B), 9-11 November 1992, 19 p.*
DE, EN, ES, FR

Ref. 032

* **Europäische Perspektiven der beruflichen Weiterbildung für strukturschwache Regionen**, *Bent Paulsen, Herausgeber, Transnationale EUROTECNET Konferenz, Dresden, 6.-7. Dezember 1993, 105 S.*
DE

Ref. 033

* **Flexibilité - Le nouveau paradigme de la production et les réponses flexibles de la formation dans une organisation qualifiante**: *Projet transnational EUROTECNET de recherche sous la direction du NADU portugais en collaboration avec la Belgique, la France, l'Espagne et le Bureau d'Assistance Technique*
(FR)

Ref. 034

* **European EUROTECNET Conference on "Promoting Innovation in Vocational Training**: *Conference report, Brussels, 31 January and 1 February 1994*
(DE, EN, FR, NL)

Ref. 035

* **Entretiens BENELUX**: *Conférence EUROTECNET/FORCE, Luxembourg, 7-8 octobre 1993, 156 p.*
FR, NL

Ref. 037

* **Innovations in Human Resource Development: Key strategies for the changing workplace**, *EUROTECNET Transnational Conference, Dublin, 21-22 April 1994*
(EN)

Ref. 039

* **Developing links between Training Organisations and Enterprises**, *EUROTECNET Transnational Conference, Athens, 24-25 October 1994*
(EN)

Ref. 040

* **Training and development in the enterprise and society: New approaches for the innovation of training methodologies**, *EUROTECNET Transnational Conference, Fiesole-Firenze, 4-5 November 1994*
(in preparation)

Ref. 042

* **Becoming a competent learner: Pointers for trainers on cultivating people's capacity to learn**, *by Barry Nyhan, 1994, 35 p.*
EN, FR

Ref. 044

* **Training for trainers: Further and complementary development for training professionals: The experience of the EUROTECNET Programme**, *by Piera D'Aloja, Sylvie Osterrieth, 1994, 43 p. (Doc. FPC/94/19)*
EN, FR

Ref. 045

* **A System in crisis ? The strategically critical issues surrounding the European vocational educational and training systems**, *ed. by Jack Horgan, 1994, 330 p. (Doc. FPC/94/15)*
EN, FR
Contains a compilation of a synthesis of the reports of the national EUROTECNET strategic conferences, held from October 1992 - April 1993 in the Member States. They were:
- The trainer as a consultant in a changing work organisation (B-nl)
- How do the training centres cope with new trends ? (DK)
- Learning and the work environment in SMEs (D)
- The trainer as learning and development agent in a changing work environment (GR)
- Curriculum development and new qualifications in the light of technological change (E)
- New skills, new qualifications, flexible training responses, innovations and transnational partnerships (F)
- Managing innovations in training and education (IRL)
- Experiences and perspectives of innovation in the field of vocational training (I)
- The multi-media approach in vocational training (L)
- Linkages between industry, education and training (NL)
- Engineering of training in new technologies (P)
- Economy in production (UK)

E. Transfer Issues

Ref. 012

* **Models of Transfer**: *EUROTECNET Workshop, Dublin (IRL), 10-12 June 1991, Report, 159 p.*
EN

Ref. 036

* **Entretiens BENELUX 1994: Dissémination des produits**, *Conférence EUROTECNET/FORCE, Veldhoven (NL), 20-21 octobre 1994*
(in preparation)

Ref. 041

* **Innovationstransfer von Modellversuchsergebnissen im europäischen Netzwerk EUROTECNET**, *Vortrag von Bent Paulsen (NADU - BIBB), Hochschultage Berufliche Bildung, München 1994, 9 S.*
DE

F. Instruments

Ref. 004

* **Directory of Training Material & Resources available within the EUROTECNET Programme**, *June 1990, 69 p.*
EN

Ref. 009

* **Instrument for the Monitoring of Changes in Occupational Profiles**, *1990*
EN, FR, NL
second edition, *1992*
EN, FR

Ref. 014

* **Common principles for the assessment of the cognitive results of training.**
project coordinator: *Jack Horgan, with the scientific collaboration of E. Boxus, C. Alonso, A. Gammaldi, G. Taylor et al., Brussels: Commission of the European Communities, 1991, 124 p.*
EN, ES, FR, IT

Ref. 027

* **Metaplan: A method to assist the planning process**: *practical guidelines, Brussels: EUROTECNET, 1993, 50 p.*
EN (DA, ES, FR, GR, IT, NL, PT)

Ref. 029

* **12 Steps towards the Qualification of Employees**: *Mastering new technologies through continuing training, by Thomas Stahl and Johannes Koch, Brussels, 1993, 99 p.*
EN (FR)

Ref. 031

* **Seminario de Productos FORCE - EUROTECNET**, *San Cugat del Vallès - Barcelona, 13-14 enero 1994, 13 p. + annexes*
ES

see also section "General Information"

General Information

Ref. 001

* **EUROTECNET Information Package**, *1991, 54 p.*
DA, DE, EN, ES, FR, GR, IT, NL, PT
out of print

Ref. 002

* **EUROTECNET Information Brochure**, *1991, 12 p.*
DA, DE, EN, ES, FR, GR, IT, NL, PT
revised edition, 1993, 12 p.
DE, EN, FR

Ref. 021

* **EUROTECNET Community and Support Measures**:
Report for the year 1991
Report for the year 1992
Report for the year 1993
EN

Ref. 023

* **EUROTECNET Member State Measures**: *Annual Report 1991, 148 p.*
EN
Are further available :
- Annual reports from the individual Member States (to be obtained from the respective NADUs)

Ref. 015

* **Compendium of the EUROTECNET projects**, *1991, 177 p.*
EN, FR
second edition, *1994, 335 p.*
EN, FR

Ref. 022

* **EUROTECNET Network Graphic Summary**, *1991, 24 p.*
EN

* EUROTECNET Newsletter
N° 1 EN
N° 2 EN
N° 3 DE, EN, FR
N° 4 DE, EN, FR

* **Compendium of results and products of the EUROTECNET projects**, *1994*
(EN, FR)

* **Reports on the Acquis developed within the 4 priority activity domains of EUROTECNET**
(EN, FR)

EUROTECNET Database

In addition to the published Compendium of projects, a database with more detailed information and interrogations possibilities is also available on floppy disks, or by modem through the ECHO server of the European Commission.

EEC Publication

* **Commission Memorandum on Vocational Training in the European Community in the 1990's**, *20 p.*
DA, DE, EN, ES, FR, GR, IT, NL, PT

All publications are available through the Leonardo programme national coordination units or from the Information Unit, DG XXII
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200 rue de la Loi
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European Commission

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